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Human Capital and Labour Market Transitions of Older Workers

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by
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Abstract

This paper examines the relationship between human capital and the labour market transitions of older workers and their earnings. This paper also compares the experience of older workers (50-60 years) with those of younger workers (30-39 and 40-49 years) in order to better understand the distinctive characteristics of the situation of older workers in the labour market.

For the purposes of this paper, a labour market transition is defined as the movement from one labour force status (employment, unemployment, out of the labour force) to another. A spell is defined as the time spent in one labour force status between two transitions. Also, we use level of education, job seniority and level of skills required in the job as human capital indicators.

Our overview of the relationship between human capital and labour market transitions shows that, as predicted by human capital theory, individuals with more human capital display a stronger attachment to the labour market. This is expressed through fewer spells of unemployment and of non-participation in the labour force, more frequent transitions from one job to another and by longer spells of employment. These individuals also receive higher employment earnings.

The relationship between human capital and labour market transitions does not usually vary significantly by age. However, for older workers, leaving the workforce is a feature that sets them apart from other workers and this is true regardless of the human capital indicator considered. We also note that the length of spells out of the labour force does not appear to be affected by the human capital accumulated by older workers. With regards to employment and unemployment spells, older workers usually experience similar, or smaller, number of spells than other workers. In particular, our findings show that younger workers are more often looking for work than older workers and that the duration of unemployment spells does not usually vary by age.

This positive picture of the situation of older workers does not preclude that particular groups may face difficulties in the labour market. For example, although no major differences are observed between the labour market transitions of older and younger workers following a permanent layoff, our data suggest that some older workers experience more important wage losses than younger workers following a layoff. However, our analysis leads us to believe that the proportion of older workers experiencing problems in the labour market should decrease with future cohorts given their higher levels of education.

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1. Introduction

Over the past few decades, significant changes in the labour force have attracted attention on how the situation of older workers has evolved under these new conditions. The fast pace of technological change and increased global competition now require all workers to be more flexible given the knowledge and skills they need to develop and master. For some groups of older workers, there is a fear that these changes have made their skills outdated, making it difficult for them to adapt to the evolving labour market. In particular, there are concerns that some older workers will not have the knowledge and skills required to remain part of the workforce.

At the same time that these changes were occurring, the conditions under which certain older workers ended their participation in the labour market also changed considerably. Over the past 20 years, there has been a major decrease in the participation rate of older workers[1]. Although part of this decline has been attributed to the introduction of various private and public pension plans, it was also coupled with other phenomena that may have resulted in the early retirement of some older workers. Indeed, the increased risk of permanent layoff, longer spells of unemployment than for younger workers and lower earnings in jobs obtained following a layoff may have contributed to speeding the decision of some of these workers to retire[2].

Whether compelled to leave the labour force or not, the ability of older workers to adjust to these phenomena is jeopardised by some of their characteristics. For example, older workers have on average lower levels of education compared to younger workers. This can hinder their labour market transitions by restricting most of these older workers to jobs linked to the "old" economy, in industries where job opportunities are declining and where the skills required cannot be easily transferred to growth industries. The limited participation of workers approaching retirement in training activities (and the short period of time to reap the benefits of such an investment) also makes it difficult, if not impossible, for them to adapt to the new requirements of the labour market when forced to find new employment. In a knowledge-based economy, where jobs

1 Among males only.

2 Some of the studies that have examined these phenomena are Blau (1994), Chan and Stevens (2001) and Peracchi and Welch (1994).

require a constant renewal of knowledge, the prospects of a majority of displaced older workers appear at first glance to be relatively dim.

In order to establish a fair diagnostic, the situation of older workers must however be compared to that of younger workers. Although some aspects of the situation of older workers in the labour market have deteriorated, this does not necessarily leave them in a worse position than younger workers are. The unemployment rate of older workers is still below that of younger workers and their earnings continue to grow compared to younger workers. Further, although older workers have on average less education than younger workers, they have more labour market experience, which may serve to partly offset the effects of their lower level of education.

Data from the Labour Force Survey (LFS) are often used to look at the labour market situation of older workers[3]. These studies often focus on the proportion of long-term unemployed workers among older workers in recent years, a figure that is significantly higher than that observed among younger workers. These findings, combined with longer average spells of unemployment for older workers than for younger workers, lead to concerns that part of the reduced participation rate of older workers is due to forced withdrawal from the workforce following an unsuccessful period of job searching.

However, longitudinal data are required to properly measure the length of unemployment spells since the way in which the LFS is designed could lead to an overestimation of the time spent in a given labour force status (we will come back to this feature of the LFS later in this paper). For these reasons, we decided to look at the transitions[4] of older workers to better understand their behaviour in the labour market. In particular, the longitudinal data from the Survey of Labour and Income Dynamics (SLID) enable us to evaluate more accurately the length of unemployment spells and to compare our findings with those obtained using the LFS.

For the reasons given earlier, one of the objectives of this paper is to contrast the experiences of older workers with those of younger workers in order to better understand the distinctive characteristics of the situation of older workers in the labour market. Given the important role

3 See among others "Labour force update", Volume 2, Issue 2, 1998, published by Statistics Canada.

4 For the purposes of our study, a transition is defined as the passage from one labour force status (employment, unemployment, out of the labour force) to another. A spell is defined as the time spent in one labour force status between two transitions.

human capital plays in labour market outcomes, this paper also provides an overview of the relationship between human capital and the labour market transitions of older workers and examines how that relationship differs by age group.

We hope this work will lead to a more thorough understanding of the interactions between older workers' labour market transitions and human capital. We also hope that this report will help to enhance knowledge of the Canadian labour market workings, as the data source for this project is one of the few surveys to allow an examination of the dynamics of labour market transitions in Canada.

The organisation of this report is as follows: the next section describes the main predictions of the human capital theory which serve to orient our analysis. In the following section, various empirical studies that have looked at older workers, as well as at displaced workers are summarised. The focus is on the results linking the human capital of these workers to their transitions. The data used in our analysis is outlined in the fourth section. The fifth section provides a general description of our sample. The subsequent sections deal with the results of our analysis, which are mainly descriptive. The sixth section compares the frequency and length of the transitions observed during the period studied as well as employment earnings by age groups. The seventh section repeats this analysis, this time based on the following human capital indicators: level of education, seniority and skills. Lastly, the conclusion reiterates the main findings of our analysis and describes their implications.

2. Human capital and labour market transitions

One of the most widely used applications of the human capital theory is unquestionably the link that it establishes between invested or accumulated human capital and workers' earnings. Indeed, the human capital theory assumes that the acquisition of knowledge and skills leads to increased productivity and earnings.

According to Becker (1993), the degree to which the acquisition of knowledge and skills is compensated by higher wages depends on the specificity of the abilities acquired. The more specific the skills and knowledge are to the job held, the greater the share of the costs associated with the acquisition of these skills that is assumed by the firm. Indeed, the employee has no interest in acquiring at his own expense skills and knowledge that will be of no use if he leaves his job or is laid off. In order to retain employees in whom the firm has invested specific human capital, it offers these employees a wage premium in order to be able to reap the benefits of its investment. On the other hand, the cost of acquiring general (or transferable) knowledge and skills is assumed by the employee, there being no advantage to the employer to pay for knowledge from which other firms may benefit.

From this latter relationship, we can establish a link between workers' mobility and the level of specific human capital of those workers. The turnover in employees with specific skills should be less given the incentives associated with this type of investment for both the firm and the employee. Indeed, the more the human capital held is specific (the less it is transferable to another firm), the greater the employee's interest in remaining with the firm that rewards him for that capital. Similarly, the firm has no interest in laying off individuals with specific skills that it has helped to develop if it plans to benefit from those skills. These hypotheses suggest that there should be an inverse relation between the number of transitions in the labour market and the level of specificity of an individual's skills. This implication could be altered by the number of transitions from one job to another. It is possible that individuals with high human capital can afford to change jobs more frequently than other individuals if there is high demand for their knowledge and skills. Potentially higher earnings would likely encourage such transitions.

The simple model of the human capital theory described here can be expanded by introducing a number of factors, such as labour market imperfections. In some cases, these changes alter

slightly the predictions made earlier without actually calling them into question. Acemoglu and Pischke (1998) examined the impact of asymmetric information between the employer and other firms about the skills of its employees on the funding of general training for individuals by the employer. These authors developed a theory by which direct observation by the employer of the knowledge and skills of its employees encourages the firm to invest in general training of its employees, other firms being unable to assess the level of human capital acquired by employees who received this type of training.

If we go back to the more "general" model of the human capital theory, that model also predicts that employment earnings increase with the age of individuals but at a decreasing rate. Thus, it is to the advantage of individuals to invest in human capital at the start of their careers in order to maximize the anticipated benefits of that investment, given that those benefits increase with the number of years spent in the labour market. Older workers have less interest in making a significant investment in the development of their human capital given the short time that they will have to benefit from such a commitment. This comment applies equally to the firm, which has an interest in training workers who are likely to remain with it for a reasonably long time so that it can profit from its investment. This leads to a situation where older workers seeking employment will have difficulty being hired for jobs involving ongoing, costly training.

The predictions of the human capital theory suggest that individuals with significant human capital should experience more "favourable" transitions in the labour market than less well-equipped individuals. Thus, individuals who have accumulated large "quantities" of human capital should make transitions toward high-paying jobs, should experience shorter job search spells, and should consequently show a stronger attachment to the labour market.

The analysis presented in this paper will focus on the relationship between human capital and the transitions of workers and their earnings and on highlighting the differences observed between workers based on age. We use level of education and job seniority as indicators[5] of human capital, as well as levels of skills required in the job. The latter indicator is based on a classification by broad categories of occupations.

[5] These variables are considered indicators because they do not directly represent the skills and knowledge acquired by workers.

More precisely, this classification was developed by Lavoie and Roy (1998) and is based on the skills required in the occupation. In keeping with the approach adopted by Orsberg, Wolff and Baumol (1989), the authors grouped the occupations into six categories:

1. occupations required to produce knowledge or provide expertise (knowledge category);
2. those requiring the use of knowledge or data (data categories);
3. management occupations (management category);
4. occupations in which workers provide services (services category);
5. occupations involving the transformation or processing of materials (goods category); and
6. occupations that require the use of data and the provision of services (data/services category).

3. Transition of older workers: Review of empirical literature

Below is a summary of the main empirical findings reported in the literature dealing with the transitions of older workers[6]; it insists on the impact of human capital variables on the behaviour of older workers.

Many studies have focused on explaining the decision of older workers to leave the workforce but relatively few have examined in depth the relation between the level of human capital of older workers and the decision to leave the labour force. Studies of retirement usually examine the impact of determinants such as private or public pension plans, the worker's health or the spouse's labour force status. Further, the available data often limit the analysis of older workers' behaviour, the longitudinal data available not always being detailed enough to distinguish between a permanent withdrawal from the workforce and a temporary one, for example.

A review of the literature on retirement shows that the occurrence of certain events, such as unemployment or more specifically an involuntary loss of employment, results in the affected older workers being more likely to leave the workforce than other older workers (see Peracchi and Welch, 1994 and Chan and Stevens, 2001). In his study, Blau (1994) also identifies the time spent in a specific state as being a major determinant of the behaviour of older workers in the labour market. His findings also emphasise that leaving the workforce should not be viewed as a permanent and irreversible decision.

While these studies discuss mainly the importance of the dynamic behaviour of older workers in the labour market in the decision to retire, they also show that human capital, and particularly the level of education, plays a key role in the labour market transitions of older workers. It is found that highly educated older workers have the lowest probability of leaving full-time work (Peracchi and Welch, 1994). These authors suggest that the reduced employment rate of men in recent years may be linked to the deterioration of the job market for less specialized workers. Also, Blau (1994) found that, among older workers, level of education is positively related to labour market attachment and that a high number of years of experience is positively correlated with stable labour market behaviour for workers older than 55 years.

[6] Most of this literature is from the United States.

Another trend in the literature on older workers and the role of human capital deals with displaced workers. These workers are usually defined as workers who have lost their jobs involuntarily (the following employment termination reasons are usually retained: closure or relocation of the company, permanent layoff and any layoff not seasonally related). These studies cover workers of all ages and allow the impact of permanent layoff to vary by age.

Fallick (1996), among others, summarizes the empirical evidence on displaced workers in the United States. He comments that these workers generally come from declining industries or from occupations requiring little education. According to the findings he reports, displacement may be less related to individuals' low level of education than to the fact that they are in occupations where the level of education is low in general. Further, he points out that the incidence of displacement is not concentrated demographically (by age, among other factors) as much as it is by industry or occupation.

Fallick also comments that the length of spells of unemployment for displaced workers varies widely and is closely related to the degree of attachment to one's previous employment sector. Seniority in the previous job and belonging to a union is linked to longer spells of unemployment. However, the prevailing economic climate at the time of the displacement is also a major determinant of the duration of unemployment following the displacement. Lastly, the impact of an involuntary loss of employment generally results in a sustained and persistent loss of employment earnings.

Neal (1995) adds an important nuance to the relation between job seniority and loss of earnings following a layoff. He notes that wage losses are less if the displaced worker finds a new job in the same industrial sector in which he was working at the time of the layoff. According to the author, this finding suggests that the share of human capital specific to an industrial sector is a key component of the human capital stock of workers and thus a major determining factor in the wages offered to them.

4. Data

The data used for our analysis of the situation of older workers in Canada were taken from the Survey of Labour and Income Dynamics (SLID). This longitudinal survey, conducted by Statistics Canada, gathers weekly, monthly and annual data on the same panel of individuals over a six-year period. The study presented in this report uses the data from the first panel of this survey and covers the period from 1993 to 1997.[7] Each panel includes about 31,000 individuals aged 16 years or older (approximately 15,000 households).[8]

The period covered by our data was marked by the slow economic recovery that followed the severe 1990-91 recession. During this period, employment growth was modest partly because of weak hiring rates and significant downsizing, especially in the public sector. This slow growth was paired with a moderate decline in the frequency of unemployment spells and a slight increase in the length of these spells.[9]

The SLID contains rich information on the socio-economic characteristics of individuals (age, level of education, ethnic origin, number of individuals in the household, province of residence, etc.). It also indicates the labour force status of individuals on a weekly, monthly and yearly basis. For each spell of employment, we have the start date and the end date, the class of the worker (paid worker, self-employed worker), the number of hours worked, occupation, industry, etc. We also have access to information on jobless spells that enables us to determine, for each week in the observation period when the individual is not employed, whether the individual is unemployed or out of the labour force. The SLID also provides information on the annual income of individuals.[10]

The wealth of data available from the SLID does, however, have some limitations. Because the responses for all members of a household are provided by a single member of that household, some inconsistencies can occur when comparing data year-to-year (for example, the age of a

7 Data from the sixth and final year (1998) of this panel were not available at the time of our analysis.

8 These samples are drawn from the Labour Force Survey (LFS).

9 See Picot and Heisz (2000).

10 In this regard, beginning in 1998, the SLID replaced the Survey of Consumer Finances (SCF) as the source of information on income of individuals and households.

person may not be consistent, an employment spell may be denied in subsequent interviews). This aspect of the SLID might negatively impact the reliability of the data collected.

Further, the SLID is subject to the seam effect, which is characterized by a particularly high number of transitions reported on the "seam" of two reference periods.[11] This phenomenon is due to the fact that it is easier for a respondent to remember recent events.

When information is missing, the SLID determines the default end of some employment spells. Thus, when the person usually questioned does not respond to the survey and the termination date of a spell of employment is unknown, or when the respondent denies that there was a spell of employment, the default date of December 31 of the survey reference year is used as the end date of the spell. This approach artificially inflates the number of spells ending during that month.

Although it is possible to derive the weekly activity status of individuals, we have chosen, because of the above-mentioned problems, to use the monthly data for this variable. Another reason for this choice is that the variables related to spells of employment (such as occupation, supervisory responsibilities,...) are provided on an annual basis thus lessening the value added of the weekly activity status.

Unfortunately, the SLID does not provide information on training taken by individuals during the survey reference period. As a result, it is not possible to separate the role of training from the effects of education and experience on labour market transitions and changes in earnings noted during the period studied.

In our sample, the characteristics of each spell of employment are constant throughout the spell, regardless of its length. In cases where individuals had more than one job in the same month, we retained the characteristics of the main job, that is, the job in which the individual worked the most hours during the month.

[11] The seam effect is typical of annual surveys which, like the SLID gather longitudinal data. In the case of the SLID, which gathers information on labour force status in January of each year, we observe a disproportionately high number of transitions between December and January.

Since the SLID provides us with the start date of each job, we do not, in principle, have any left-censoring problems for these spells. This means that we know the total duration of employment spells of individuals (up until the last interview), even if the job began before the start of the survey. However, the characteristics of the employment spells ongoing in January 1993 are those gathered during that month.

Lastly, the data presented in this paper are not weighted. One of the reasons for this choice is that the weights provided in the SLID are not adjusted to reflect the selection criteria that we used in our sample. Also, these weights do not reflect the longitudinal nature of the data we use, as only cross-sectional weights were available when we did this analysis. Consequently, when our findings are interpreted, readers should remember that they represent the behaviour of the individuals who matched the criteria that we selected, as well as the criteria used to establish the SLID sample design.

5. Description of the sample

5.1 Selection criteria

In order to study labour market transitions over the greatest number of years possible, we retained only those individuals who responded to the survey in each of the years of the period studied. In addition, only individuals whose labour force status was known for all months during this period were included in our sample. We excluded individuals who were out of the labour force during the five years of the observation period, as well as individuals with a disability that prevented them from working during three or more years of the period in question.

For the purposes of our analysis, we compare the following age groups: 30-39 years, 40-49 years and 50-60 years. Individuals are grouped by their age in January 1993 and remain in the same age group throughout the period covered by the analysis[12]. The analysis is designed in such a way as to be limited to persons under 65 years of age in 1997 in order to maximize the period during which we are likely to observe older workers before they retire completely from the workforce. Furthermore, in order to compare only individuals who are fully integrated in the labour force, we excluded individuals less than 30 years old from our analysis.

The selection criteria used, combined with the demographic composition of our sample, significantly impacts the number of individuals included in the group of older workers (50-60 years group). The small size of this group sometimes restricts our analysis of the labour market transitions when additional factors, such as level of education, seniority and skills, are also taken into consideration.

5.2 Characteristics of the sample

Table 1 shows the distribution of the three age groups studied by the following characteristics: gender, level of education, seniority and skills. Among older workers, we note that males are slightly over-represented compared with women. These differences are probably explained by the selection criteria used. Indeed, the majority (70%) of individuals who were out of the labour force throughout the entire observation period were women. Overall, there is a more equal distribution by gender in the other two age groups.

[12] For the purposes of our analysis, an individual aged, for example, 39 years old in 1993 who turned 40 in 1994 is part of the 30-39 years age group for the whole reference period. We use this age group "classification" to be able to compare the same groups of individuals over time.

Table 1
Distribution of the sample by gender and human capital indicators

	Total Sample		
	30-39 years	**40-49 years**	**50-60 years**
Gender			
Male	2106 (49%)	1704 (51%)	1073 (55%)
Female	2227 (51%)	1616 (49%)	863 (45%)
Human capital indicators			
Education			
No high school diploma	751(17%)	741(22%)	733 (38%)
High school diploma, post-secondary studies	2928 (68%)	1918 (58%)	912 (48%)
University graduates	638 (15%)	639 (19%)	281 (15%)
Seniority			
]0,5] years	1374 (32%)	688 (21%)	370 (20%)
]5,10] years	1231 (29%)	742 (23%)	311 (16%)
More than 10 years	1654 (39%)	1811 (56%)	1207 (64%)
Skills			
Knowledge and management	643 (15%)	578 (18%)	295 (16%)
Data	1367 (32%)	1052 (33%)	526 (28%)
Services	808 (19%)	628 (19%)	421 (22%)
Goods	1424 (34%)	976 (30%)	647 (34%)
Number of individuals	**4333**	**3320**	**1936**

At 38%, the proportion of older workers without a high school diploma (HSD) is much higher than among younger workers. The observed gap between the level of education of older workers and that of younger cohorts is explained in part by the democratization of access to education which happened too late for the majority of individuals in the 50-60 years age group to take advantage of it. In addition, the increasingly higher training requirements encountered in the labour market also explain in part the higher level of education among the younger cohorts of workers.

As expected, the distribution of individuals by job seniority[13] reflects the age of the individuals, that is, a larger percentage of older individuals have been in jobs for a long period than younger individuals.

[13] Because we use the seniority variable as an approximation of the accumulation of skills specific to a job, we have classified individuals by the job in which they likely spent the most time to accumulate such skills, namely, the longest job observed during the period examined. As we mentioned earlier, the SLID provides us with the start dates for spells of employment, which enables us to determine the total length of these spells.

The classification of individuals by the main skills required in the first job[14] observed in the sample shows that older workers are found mainly in the goods production and data fields. This is also the case for individuals in the other two age groups.

Although the relative importance of these fields is not exactly the same for the three age groups, we note that the distribution by skill level differs less by the age of the individuals than does the distribution by level of education or seniority. We can assume that the distribution by skill level reflects the combination of diverse characteristics related to the accumulation of human capital, which would explain the observed similarities between the age groups. Thus, among older workers, more job seniority and more experience in the labour market may compensate for less education, the inverse being true for younger workers.

[14] In order to retain as many individuals as possible in each category, we have classified them by the occupation held in the first job observed in the sample. A classification by longest job would have unnecessarily restricted our sample since this classification requires knowledge of the exact start date of the spell of employment. However, a brief analysis showed that the distribution of individuals by skill level is not affected by the choice of employment spell used to classify the individuals. Further, given the small size of the samples available to us, we have combined for the purposes of this study the knowledge category with the management category, as well as the data/services category with the data category.

6. Transitions

In this section, we examine the labour market transitions of individuals in the various age groups from a number of angles: the average number of spells during the period considered (we distinguish between three types of spells: employment, unemployment and out of the labour force); the frequency of transitions according to their origin and destination; and the duration of the spells. We also take a look at the transitions of older workers depending on whether or not they receive pension income. This section also includes a brief summary on the examination of workers' behaviour when they are permanently laid off. We complete this analysis of the movement of workers in our sample by studying the change in their earnings during the period in question.

To ensure as detailed an analysis as possible, the results by gender are not presented in this paper since the sample sizes were too small to allow a reliable analysis of transitions on a gender basis for all of the variables studied.

For ease of presentation, most of the tables and graphs showing the results discussed are provided in the appendices.

6.1 Average number of spells

When we compare the movements (Table II) of older workers with those of younger workers without distinguishing the type of spell, we note that, on average, older workers have fewer spells[15] than 30-39 year old workers. At first glance, there are no significant differences between the total average number of spells of 40-49 year olds and that of older workers when no distinction is made based on origin or destination of the spells.

When we consider the types of spells, we note that older workers have more spells out of the labour force on average than other workers, which is not surprising given that they are more likely to withdraw permanently from the labour force than younger workers. Individuals aged 30-39 years tend to have more spells of employment and unemployment than individuals in the

[15] We used several tests to determine whether the differences noted between age groups for the various variables were statistically significant. For the sake of brevity, the results of these tests are not included in this paper but are available from the author on request. These tests were conducted using the GLM, TTEST and FREQ (Chi-squared test) procedures of the SAS software package.

other two age groups. There may be various factors causing this greater amount of movement in the labour force: their higher level of education and the fact that these individuals are at the beginning of their working life may lead them to change jobs more frequently, while a higher risk of being laid off because of less seniority may lead to more frequent spells of unemployment.

Table 2
Average number of spells between 1993 and 1997
Total sample

	30-39 years	40-49 years	50-60 years
Type of spell			
Employment	2.1	1.9	1.8
Unemployment	0.7	0.6	0.5
Out of the labour force	0.5	0.4	0.6
Total	**3.2**	**2.9**	**2.8**

At first glance, it may seem that the movements of workers discussed in this paper are quite few for a five-year period compared with the flows observed in the labour market during the 1990s (see for example Picot, Lin and Pyper 1997). However, the average number of spells per individual only gives us an overview of the distribution of these spells. Thus, while older workers make fewer transitions on average than younger individuals, 59% of persons aged 50-60 years made at least one transition during the period considered (i.e., they had at least two spells) compared with 48% of individuals 40-49 years and 55% for 30-39 years.[16] However, the proportion of individuals who made more than two transitions (or had more than 3 spells) was the highest in the 30-39 age group (42% of 30-39 year olds made more than two transitions compared with 35% for 40-49 year olds and 37% for 50-60 year olds), which explains why individuals 30-39 years have the highest average number of spells among the three age groups considered in this study.

From a study of the distribution of each type of spell,[17] we are able to determine that older workers are the group with the highest proportion of individuals who have not experienced a spell of unemployment (74%) and the lowest proportion of individuals who have not

[16] This implies that 41% of older workers remained in the same labour force status from January 1993 to December 1997 (52% in the 40-49 age group and 45% in the 30-39 age group). In more than 98% of cases, individuals in the three age groups were employed throughout the period considered.

[17] These findings are not presented in this paper but are available from the author on request.

experienced a spell out of the labour force (58%). In the 40-49 age group, these percentages are 72% and 78% respectively, and 67% and 73% respectively for the 30-39 age group.

6.2 Censored spells

An examination of the spells ongoing at the end of the observation period, that is, in December 1997 (see Graph B.1 in Appendix B) shows, at that time, that older workers were less likely to be employed (65% of individuals) than individuals in the 30-39 and 40-49 age groups (88% and 87% of individuals respectively). However, there are no significant differences between the age groups in terms of the proportion of individuals unemployed at the end of the observation period. This leads to the observation that the proportion of individuals out of the labour force in December 1997 was considerably higher among older workers than among other workers (29% compared with 7% and 8% for the 30-39 and 40-49 age groups respectively). Given that at the end of the observation period the older workers considered in this study were between 54 and 64 years old, it is reasonable to assume that a large proportion of these individuals had permanently retired from the labour force.

6.3 Transitions by origin and destination

The graphs in Appendix C show the transitions completed between January 1993 and December 1997 for each of the age groups considered.[18] These transitions are shown by origin of the transition, that is, the labour force status of the individual prior to changing status. There are three possible origins for the transitions considered: employment, unemployment and out of the labour force (OLF). For each of these origins, there are three possible destinations.[19]

Each graph in Appendix C shows the distribution in percentage of transitions by destination, for each origin status. For example, Graph C.1 shows that among the transitions made by individuals in the 30-39 age group originating from unemployment, 83% ended with a spell of employment

[18] All transitions made by individuals in our sample are represented in those graphs.

[19] More specifically, an employed individual may either change jobs (employment to employment transition), become unemployed (employment to unemployment transition) or leave the workforce (employment to out of the labour force transition). An individual who is unemployed can find employment (unemployment to employment transition) or leave the workforce (unemployment to out of the labour force transition). Lastly, an individual who is out of the labour force can reintegrate the workforce by finding a job (out of the labour force to employment transition) or by looking for employment (out of the labour force to unemployment transition).

compared with 17% that ended with leaving the labour force. Note that these transitions may have occurred at any time between January 1993 and December 1997.

Graph C.3 shows that among the transitions of older workers originating from employment, 31% ended with a new job. Direct transitions from one job to another were less frequent for older workers than younger ones. Individuals between 30 and 39 years of age were the most inclined to make this type of transition (almost half (46%) of their completed spells of employment were immediately followed by another job). For older workers, the most frequent result of a spell of employment was retirement from the workforce (39% of transitions from employment ended in leaving the labour force). Lastly, we see that spells of employment followed by a spell of unemployment were more frequent among individuals between the age of 40 and 49 years, followed by those 30 to 39 years.

Although younger workers were less likely than older workers to leave the labour force, we still note that one in five spells of employment ended with a departure from the workforce for individuals aged 30 to 49 years. Potential reasons for departure include care of young children (especially for women) or of family members in poor health.

Transitions originating from unemployment showed less difference among age groups. Transitions from unemployment to employment occurred less frequently among older workers (76%) than among younger workers (83% and 84% for 30-39 years and 40-49 years respectively). Here again, leaving the labour force was a more frequent result for older workers than for younger ones.

For both older and younger workers, leaving the workforce is not necessarily an irreversible decision. An appreciable number of workers returned to the labour force. Thus, for all three groups considered in this study, re-entering the labour force accounted for between 16% and 18% of the total transitions completed during the observation period. However, among younger workers, this return to the labour force involves more often moving first into a spell of unemployment, while among older workers this type of transition leads more often directly to employment.[20]

[20] The small size of the samples available to us, especially for older workers, prevents us from analysing the reasons that push individuals to leave the workforce and then to reintegrate.

6.4 Duration of spells

The tables in Appendix D provide, for each of the possible origins, the duration of spells (in months) by destination of the transition (origins are listed in the rows with destinations in the columns). For example, at the intersection of the "Employment" row and the "Unemployment" column, we find the average duration of spells of employment that ended in a transition to unemployment. In the "Censored" column, we find the average length of spells ongoing in December 1997,[21] while the "Total" column contains the average duration of spells with the same origin (excluding the censored spells for which we do not know the total duration), all destinations combined.

As mentioned earlier, we see from Tables D.1, D.2 and D.3 that the length of employment spells (or seniority on the job) increases with age. This finding is consistent regardless of the outcome of the spells. It appears also that the duration of unemployment and OLF spells completed before the end of the observation period is not statistically different by age, regardless of the outcome of the spell. OLF spells ongoing in December 1997 (censored) were longer for older workers, which suggests once again that a large portion of these older workers had permanently left the workforce at that time.

Based on our findings, the three age groups considered in this study experienced similar unemployment spell duration on average, that is, between 6.5 and 7.6 months for spells completed prior to January 1998 (all destinations combined).[22] This finding is slightly different from observations based on the LFS data where the length of unemployment of older workers was longer than that of younger workers.[23] Thus, even though in our sample the proportion of

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21 When distinguishing labour market transitions by their origins and destinations, it is important to take into consideration the special end result of spells that were ongoing in December 1997, namely, censoring. Censored transitions are ones where we do not know the destination of a spell ongoing at the end of the observation period. The only information that we have concerning such spells is the length to the end of the observation period and the origin. Specifically, when we consider the duration of transitions, it is essential to make a distinction between these transitions and those completed during the observation period because including censored transitions in the calculation of average durations would result in an underestimation of those durations.

22 The slight differences observed are not statistically significant.

23 Based on the LFS data, a growing percentage of older workers were experiencing spells of unemployment exceeding one year over the 1993-97 period. However, the LFS data overestimate the real length of unemployment spells because this survey "captures" unemployment spells at a given point, leading to over-sampling of long spells of unemployment, since these spells are more likely to be ongoing at a given point in time. The SLID data, however, provide us with the duration of all spells that have occurred, which likely explains the differences observed. Picot and Heisz (2000) also mention this aspect of the LFS.

unemployment spells lasting more than one year was 15% for older workers compared with 11% for younger workers, it appears that, in terms of average duration, older workers are not more adversely affected than younger workers.[24]

6.5 Pension income and transitions

As evidenced by the findings reported so far, withdrawal from the labour force appears to be one of the main features that separate the behaviour of older workers from that of younger workers.

Since the SLID data do not allow us to identify individuals who considered themselves to have been retired throughout the entire observation period, we used as a criterion for distinguishing older workers likely to have permanently left the labour force from other older workers the fact of whether they did or did not receive pension income (from private or public plans) during the observation period.

Based on this criterion, we examine the transitions of these two new groups of older workers in relation to the transitions of younger workers.[25]

Graph B.2 reveals that a much larger percentage of individuals who received pension income were out of the labour force than other older workers in December 1997 (59% compared with 14%). In general, individuals with pension income experienced more transitions than other older workers (see Table III). Indeed, in terms of the total number of transitions that they experienced, their behaviour is not statistically different from that of individuals aged 30-39 years. The distinction made in the 50-60 age group also entails that the behaviour of individuals in the 40-49 age group and in the 50-60 age group without pension income was similar. This finding is explained by the fact that individuals with pension income were more likely to have experienced an additional transition (leaving the labour force) than other older workers.

[24] Unfortunately we are unable, because of the size of our sample, to reliably analyse the phenomenon of long-term unemployment by level of education or seniority, for example, or among individuals who have been laid off.

[25] During our brief analysis of the transitions of older workers with pension income, we also became interested in examining the impact of receiving severance pay on the decision of older workers to remain or leave the workforce, and more generally, on the paths taken by these workers. However, the sample of older workers who received such payments was too small to allow a detailed study.

Table 3
Average number of spells between 1993 and 1997
50-60 years, based on whether or not they received pension income

	No pension income	With pension income
Type of spell		
Employment	1.8	1.7
Unemployment	0.5	0.5
Out of the labour force	0.5	1.0
Total	**2.8**	**3.2**

This similarity in the behaviour of 40-49 year olds and 50-60 year olds is also found when we examine the average number of employment spells. The 30-39 age group still has a greater number of spells of unemployment than other workers. As expected, there were more OLF spells among individuals with pension income.

In terms of the analysis of transitions by origin and destination (see Graphs C.4 and C.5), the main impact of this breakdown in the group of older workers is that it enables us to see once again that the behaviour of individuals aged 50-60 years without pension income is similar to that of individuals aged 40-49 years. Therefore, the differences observed in the transitions of older workers compared with younger workers appear to widen when the older workers receive pension income, the latter being more likely to leave the labour force.

The findings on the length of transitions in the labour market are not very different from those already mentioned (see Tables D.4 and D.5). We note that, on average, individuals with pension income had more job seniority than other older workers, and that their OLF spells ongoing in December 1997 had lasted longer than those of other individuals. The observed length of censored employment spells for individuals with pension income were shorter, however, than those of individuals aged 50-60 years without pension income. This may indicate that for individuals with pension income, these jobs were the result of a reintegration in the labour market or that these individuals had left their job for more flexible employment that enabled them to gradually leave the workforce.

Lastly, we see that the unemployment spells completed prior to December 1997 by individuals who received pension income were longer than those of other individuals. However, this finding does not necessarily imply that these individuals had difficulty finding employment; it might also reflect the fact that these individuals, because of their other sources of income, could afford

to spend more time looking for a job that better met their needs. We also need to treat this finding with caution given the small number of individuals in this situation.

6.6 Permanent layoffs

In light of the concerns raised about the ability of certain older workers to adapt to the changes that currently dominate the labour force, we took a closer look at the transitions of older workers who are permanently laid off[26] in order to determine whether older workers affected by this phenomenon have more problems than younger workers in the same situation. We will present our main findings in this section: Appendix F provides a more detailed analysis.

The first observation is that slightly fewer older workers in our sample were affected by a permanent layoff in the observed period than individuals in the 30-39 age group (15% for 50-60 year olds compared with 17% for the 30-39 year olds). Also, in general, laid-off workers have characteristics associated with a low level of human capital: their level of education is low, they have little seniority or their occupation requires skills that do not demand a significant investment in human capital.

In each of the three age groups, individuals affected by a layoff made a lot more transitions than other workers. As was the case with the total sample, we note that laid off older workers made fewer transitions than younger workers. However, the number of unemployment spells of laid off individuals is on average the same, regardless of age. In addition, when we compare the time spent unemployed or out of the labour force of the three age groups, we do not find any statistically significant differences by age, regardless of whether individuals were laid off or not.

In conclusion, our analysis of the behaviour of older workers confronted with a permanent layoff does not show for these workers any major differences compared with younger workers with regards to their labour market transitions. However, our data suggest that it is possible that some older workers experience more important wage losses than younger workers following a lay off. A more thorough analysis of earnings in jobs following a lay off is needed to verify this hypothesis, but is beyond the scope of this study.

[26] Permanent layoffs are defined as follows: the employment spell ended because of a layoff (non-seasonal) or because the company closed or moved its operations.

6.7 Change in earnings

In order to complete this initial analysis of the situation of older workers in the labour market, we will now briefly examine the evolution in their employment earnings and their main sources of income.

Graph E.1 (see Appendix E) illustrates the change in average annual earnings[27] of the individuals in our sample during the 5–year period from 1993 to 1997. We see that the earnings of older workers fell over the period in question to the point where they were below the earnings of individuals aged 30-39 years at the end of the observation period. If we separate the older workers into those who received or did not receive pension income (Graph E.2), we find that this decrease is entirely due to the drop in earnings of individuals with pension income, the employment earnings of individuals without pension income having remained relatively stable from 1993 to 1997. The drop in the earnings of individuals with pension income is probably explained by the reduction in the weeks and/or hours worked by individuals leaving the workforce.

The graph also shows that individuals in the 40-49 age group experienced the same stability in employment earnings as those in the 50-60 age group who did not have pension income. The 40-49 age group had the highest earnings of all of the age groups considered and held this position throughout the observation period, which is a reflection of their greater experience in the labour market compared with younger workers and the fact that they are still far from retirement. There was a slight increase in the employment earnings of the 30-39 age group.

Our examination of the primary income source of individuals[28] confirms that older workers with pension income during the observation period depended increasingly over the years on pension income, such income replacing employment earnings as the main income source for the majority of these individuals. In addition, the percentage of these individuals receiving government transfers grew over the period in question. This is quite probably due to the collection of income from public pension plans. In 1997, among individuals with pension income, 55% reported

[27] For each year, we calculated the average earnings of individuals with positive earnings during that year. The size of the sample of older workers did not allow us to restrict this calculation to individuals who worked full-time during the entire year.

[28] These results are not included in this paper but are available from the author on request.

pension income or government transfers as their primary source of income compared while 29% reported employment earnings as their primary source of income.

In contrast, for individuals aged 30-39 years, we see that the percentage of individuals relying mainly on government transfers decreased during the observation period. The economic recovery that took place during the period considered, combined with a tightening of eligibility criteria for Employment Insurance, may have been the reasons for this decrease.

In the case of older workers without pension income, the percentage of individuals for whom employment earnings were the main source of income remained stable at about 70% during the period in question. In comparison, the percentage was about 77% for those 30 to 49 years of age during the same period.

6.8 Summary of findings

There is no question that leaving the labour force is the main factor setting older workers apart from younger workers. Thus, individuals 50 to 60 years old experienced a greater number of OLF spells than other workers and their spells of employment and unemployment ended more frequently in leaving the labour force. However, overall, older workers made fewer transitions than younger workers, which seems to indicate more stable behaviour in the labour market compared with other workers.

Although compared with younger workers, the phenomenon of long-term unemployment occurred more frequently among older workers, on average, the latter did not spend more time looking for employment than other workers. Further, the examination of the behaviour of older workers who had been permanently laid off did not reveal any notable differences in terms of their transitions relative to other workers.

The differences observed between the age groups narrowed when we considered the behaviour of only those older workers who did not receive pension income during the period in question, the latter apparently being less likely to permanently leave the labour force in the near future. In addition, receiving pension income appears to explain the overall decline in employment earnings of older workers during the period examined.

These findings appear to indicate that, in general, older workers do not experience specific difficulties adapting to the changes that will henceforth dominate the labour force. Nevertheless, it is possible that some groups within these workers may be having problems that so far have been undetected.

In light of the fact that there are almost twice as many older workers without a high school diploma (HSD) compared with other workers in the sample (Table I), and given the increasingly higher requirements of the labour market regarding level of education and training of workers, it is important to examine the relationship between human capital and the paths taken by older workers, as well as to determine if there are differences in the behaviour of workers in the various age groups but with the same levels of human capital. The next section examines these aspects of the movements of workers.

7. Taking human capital into account

In this section, we will repeat the analysis that we conducted in Section 6 by examining the relations between three indicators of human capital (level of education, seniority and skills) and the movements[29] of individuals in the labour force and the change in their earnings.

For the purposes of our analysis, we consider job seniority to be an indirect measure of the accumulation of specific skills in a job. Thus, the longer the time spent in the same job, the more the individual accumulates and develops skills specific to that job. Of course, it is possible that these skills are in fact specific to the firm, the occupation or even the industry in which the individual works. However, we cannot identify these various components from the data available to us. Hence, our analysis deals with the time spent in a single job.

We also assume for the purposes of our analysis that the occupations related to the knowledge, management and data categories represent a larger investment in human capital than the services and goods categories. The occupations in the later two categories often involve routine work or on-the-job learning, which do not generally involve a significant investment in human capital.

7.1 Average number of spells

Our examination of the average number of spells between 1993 and 1997 shows that, for each age group, the individuals with the most human capital tended to make fewer transitions than those with less human capital (see the tables in Appendix A). Thus, accumulating specific skills or investing more heavily in human capital appears to ensure greater stability in the labour market, making it easier, among other things, for individuals to adapt to the new skill requirements in the labour force.

In particular, individuals without a high school diploma experienced in total almost twice as many spells as individuals with a university degree in each of the age groups considered. Similarly, individuals with five or fewer years of seniority in the same job experienced on average three times more spells than individuals with more than 10 years of seniority. Lastly, we

[29] Because of the small size of the older workers sample, it is not possible to examine the relationship between human capital indicators and the transitions of these workers based on whether or not they received pension income. For the same reason, we are unable to examine the transitions of older workers following a permanent layoff based on these variables.

find that individuals working in the goods sector and in the services sector tended to make more transitions in the labour force than other individuals.

In general, the differences noted between the age groups in Section 6.1 generally narrow when we take into consideration human capital indicators. Thus, there are no statistically significant differences in the total number of spells when comparing age groups within a given level of seniority. The exception to this rule is older workers with more than 10 years of seniority who move slightly more often than younger workers in the same category. This is probably due to the phenomenon of retirement that likely affects this group of older workers to a greater degree[30] than older workers with less seniority.

Individuals working in the goods sector and in the knowledge and management sector make on average the same total number of spells regardless of age. Only the 30-39 year old working in the data and services fields had more spells than older workers in the same fields.

The differences between older workers and other workers noted in Section 6.1 are still present when comparing the age groups by level of education: we find that individuals in the 40-49 and 50-60 age groups generally made fewer transitions than those in the 30-39 age group. It was only among university graduates that older workers made as many transitions as younger workers.

In general, when examining the number of spells in each status (employment, unemployment, out of the labour force), we find that once again a higher level of human capital is associated with fewer spells. We also find that regardless of the human capital indicator considered,[31] older workers have more spells out of the labour force than younger workers.

In contrast to the findings by level of education where older workers generally had fewer employment and unemployment spells than other workers, when we consider seniority, the average number of employment and unemployment spells of workers is usually not statistically different by age group. The same holds true for individuals working in the knowledge and management fields and in goods production. Older workers in the data and services fields

[30] We noted in Section 6.5 that individuals with pension income had longer spells of employment than other older workers in our sample.

[31] The only exception was individuals without a high school diploma where the number of spells out of the labour force in the 50-60 age group is not statistically different from that of the 30-39 age group.

generally had fewer spells of employment and unemployment than those 30-39 years old in the same fields.

7.2 Censored spells

The conclusions that can be drawn from the study of labour force status of individuals at the end of the observation period, that is, in December 1997, differ depending on the human capital indicator considered.

For each age group, individuals with the least education were generally more likely to be unemployed or out of the labour force than more educated individuals (Graphs B.3 to B.5). However, for older workers, we note that the percentage of individuals out of the labour force at the end of the observation period was not statistically different by level of education.

Unlike the level of education, the probability of not being in the labour force in December 1997 appears to be affected by job seniority in the case of older workers (Graphs B.6 to B.8). We find that 43% of individuals in the 50-60 age group with a maximum of five years of seniority during the period considered were out of the labour force at the end of that period compared with 19% for older workers with between five and 10 years of seniority and 25% for those with more than 10 years of seniority. We also find for all age groups that individuals with the most job seniority were generally those most likely to be employed in December 1997, while the greatest number of unemployed or OLF individuals was generally found among individuals with five or fewer years of seniority.

Our analysis of the labour force status of the individuals in our sample as of December 1997 (Graphs B.9 to B.11) by skill level reveals that for all age groups considered, workers who worked in the knowledge and management fields were more likely to be employed at that time than workers in the other fields. Those who worked in the services field were more likely to be out of the workforce in December 1997. Lastly, the percentage of individuals unemployed at the end of the period considered was, for each age group, statistically the same for all skill levels, except in the case of those individuals aged 40 to 49 years where there were more individuals from the goods production field in this status.

7.3 Transitions by origin and destination

In the case of transitions completed within the observation period[32] (Graphs C.6 to C.35), we find that, in general, the relation between these transitions and the human capital indicators selected was the same for all age groups: individuals with the most human capital made the most favourable transitions. Transitions from work to out of the labour force were the exception, however, the behaviour of older workers usually being different from that of younger workers regardless of the human capital indicator used.

As for transitions from an employment spell, the findings were the same for all age groups: direct transitions from one job to another occurred most often among the most educated individuals, among those with the greatest amount of seniority or among individuals working in the knowledge and management fields. Spells of employment followed by a spell of unemployment occurred more often for individuals with little education, those with the least seniority and those whose occupation involved goods production.

In general, employment spells followed by an exit from the labour force occurred most frequently among individuals with little education, except in the case of older workers where the same percentage (43%) of individuals with a university diploma as without a high school diploma experienced a spell of employment followed by an OLF spell. We can assume that these two groups would be more inclined to leave the workforce at the end of a spell of employment for different reasons: individuals with less education because their skills are less in demand, and university graduates because they hold better quality jobs where they are probably covered by a generous pension plan and their higher earnings enable them to save for retirement. The results related to individuals with a university degree should be treated with caution given the small number of individuals in this category for each age group.

It was among individuals with the most seniority that we most often find an employment spell followed by a spell out of the labour force, 48% of spells of employment ending in such a way in the 50-60 age group with more than 10 years of seniority compared with 30% in the 50-60 age group for those with less than five years of seniority. However, among those between 30 and 39

[32] The findings related to individuals with a university degree need to be treated with caution because of the small sample for these individuals in each of the age groups. However, since the findings were the same for all of the age groups and confirm the findings discussed earlier, we are presenting them anyway.

years, it was for the individuals with the least seniority where this behaviour was observed most often, while among those between 40 and 49 years, there was no statistically significant differences between the various categories of seniority. It is likely that these differences are due to the different nature of OLF spells depending on the age of the individuals.

Among older workers, the frequency of departures from a job to exit the labour force was relatively the same for all skill levels considered, except for individuals whose occupation involved the production of goods, where this type of transition occurred less often. In the other two age groups, this type of transition was observed less often for individuals working in the knowledge and management fields and equally often for others in these two age groups.

It appears that the outcome of unemployment spells[33] was generally not affected by level of education or seniority in any of the age groups. However, our examination of transitions from unemployment to employment by skill level shows that this transition was most common for individuals working in the goods production field.

Level of education does not appear to affect transitions leading to the reintegration of older workers in the labour force. Only the transition from OLF spells among those in the 30-39 age group appeared to be affected by level of education. In this group, OLF spells followed by an employment spell occurred more frequently among the most educated individuals, while OLF spells followed by unemployment happened less frequently. It is possible that the nature of OLF spells (for example, voluntary withdrawal to care for a child or "involuntary" withdrawal from the workforce because no jobs are available) may be correlated with the level of education of the individuals and be responsible for this result.

We find that, for each of the age groups considered, the transition from an OLF spell to employment happened most often among individuals with more than five years of seniority, while individuals with five or fewer years of seniority most often made a transition to unemployment. Lastly, in general, we did not find any significant differences in transitions from OLF spells based on skill level for any of the age groups examined.

[33] Because of the small size of the samples, the findings for transitions from unemployment to out of the labour force and vice versa must be treated with caution when they are examined by seniority and skill level.

The lack of differences in the transitions from unemployment and out of the labour force by certain human capital indicators does not necessarily mean that these variables do not affect these transitions. It may be that several factors simultaneously affect the movements of individuals and hide the individual impact of the variables considered. For example, job seniority or the accumulation of specific skills in an industrial sector may make up for a low level of education when the time comes to find a job or to reintegrate the labour force, especially in the case of older workers.

7.4 Duration of spells

Our study of the duration of workers' spells[34] confirms that individuals with the most human capital display the strongest attachment to the labour force (Graphs D.6 to D.35). Thus, for all age groups considered, we usually find that the most educated individuals are employed the longest. The same applies for individuals working in the knowledge and management and data fields.

For each given age group, we find no important differences by level of education or skills in terms of the length of unemployment and OLF spells. For older workers, we do find that OLF spells were longer for individuals working in the data field. It may be that the jobs related to this category (for example elementary and high school teachers) make it possible to accumulate greater seniority in the same job, thus enabling individuals to retire earlier than others.

The finding that duration of unemployment does not vary by level of education is especially surprising but this apparent lack of variation may be explained by the wide variance in observed durations. One interesting fact is that, for a given level of education, the average length of unemployment and OLF spells completed prior to January 1998 is usually the same regardless of the age of the individuals, as we mentioned earlier in Section 6.4.

When we examine the lengths of unemployment and OLF spells by seniority, we find that, in general, individuals who accumulated less than five years of seniority during the period examined had longer spells in these two states than individuals with more seniority. OLF spells

[34] Since taking into account the destination of transitions does not generally change the findings relating to the length of transitions by origin, the discussion presented here deals only with these latter findings.

of older workers are the exception, however, there being no significant statistical differences in the length of time spent in this status by seniority for this group.

If we take a moment to compare the duration of spells for each category of seniority separately, we find that the length of unemployment and OLF spells of older workers who have been in a job for a short period of time (five years or less of seniority) is no different than that of younger workers.

However, for workers with more than 10 years of seniority, we find that older workers had longer spells of unemployment than younger workers. It may be that the skills of these older workers are in less demand in the labour force, which means that they have to search for a job longer. We also find the same trend among older workers with between 5 and 10 years of seniority, except that this time their duration of unemployment was the same as that of workers in the 40-49 age group, which was still higher than for those in the 30-39 age group. These results echo those found in the literature on displaced workers where it is reported that workers with greater job seniority spend more time trying to find a new job than younger workers.

In the case of older workers with more than 10 years of experience with the same employer, these differences are increased by the fact that the average duration of employment spells for these individuals is much longer for older workers than for younger workers, resulting in the accumulation of more specific skills.

7.5 Change in earnings

The trends revealed in Graphs E.3 to E.11 are in keeping with the predictions of the human capital theory. Thus, the development and accumulation of skills, whether reflected in a high level of education, a long time with the same employer or an occupation that requires mastery of skills demanding a significant investment in human capital, are associated with higher earnings and this applies for each age group.[35]

For older workers, we find that individuals with a university degree experienced a decrease in earnings in contrast to the less educated individuals, whose earnings remained relatively stable.

[35] The study of earnings by skill level reveals that individuals working in the goods production field generally ranked second in terms of earnings. This result may appear to contradict the predictions of the human capital theory; however, other factors, such as the presence of a union and job seniority, may partly explain this phenomenon.

This phenomenon may be due to the fact that more educated individuals retire earlier than others, the decrease in hours and weeks worked resulting in a drop in annual earnings.

Leaving the workforce probably also explains why there is a decline in employment earnings of older workers with more than 10 years of seniority, while the earnings of individuals with 10 or fewer years of seniority remained stable throughout the period studied.

The analysis of the change in earnings by skill level reveals that the employment earnings of those in the 50-60 age group (as well as the 40-49 age group) remained stable throughout the period considered for all of the skill levels examined.

For individuals 40 to 49 years old, average annual earnings were also stable throughout the period examined when this variable is considered by level of education and by skill level. However, the analysis by seniority shows a slight increase in earnings for individuals with five or fewer years of seniority, while earnings for other levels of seniority were relatively constant.

During the period examined, the annual earnings of individuals in the 30-39 age group without a high school diploma remained relatively stable although they tended to increase for individuals in this age group with a high school diploma or post-secondary studies, with the gains being greatest among university graduates. We also find that among the 30 to 39 year olds, for all categories of seniority, there was some increase in employment earnings. Lastly, if we consider the earnings of these individuals in terms of skill level, we find that the only individuals who did not experience a growth in earnings were those in the services field.

In terms of income composition, individuals with little education and those with the least amount of seniority (in each age group) rely the most on government transfers for their main source of income.

7.6 Summary of findings

This overview of the relationship between human capital and labour market transitions has shown that, as predicted by the human capital theory, individuals with more human capital displayed a stronger attachment to the labour market. This is expressed through fewer spells of unemployment and out of the labour force, more frequent transitions from one job to another and by longer spells of employment. These individuals also received higher employment earnings.

Our examination also reveals that when human capital indicators are taken into consideration, the differences between age groups noted in Section 6 are generally narrowed. Thus, based on our findings, the relationship between human capital and labour market transitions does not usually vary significantly by age. However, for older workers, leaving the workforce remains a feature that sets them apart from other workers and this is true regardless of the human capital indicator considered. We also note that the length of spells out of the labour force does not appear to be affected by the human capital accumulated by these workers.

Our examination of durations by level of seniority reveals that long spells in a single job may interfere with the adjustment of older workers by prolonging their spells of unemployment or out of the labour force. However, while this observation should not be taken lightly, we must remember that the number of older workers with extensive seniority who find themselves unemployed is relatively small.[36] We must keep in mind that our findings show that younger workers are more often looking for work than older workers and that overall (as well as by level of education and skill level), the duration of unemployment spells does not vary by age.

[36] 154 older workers (8% of the 50-60 sample) with more than 10 years of seniority experienced at least one spell of unemployment during the study period. The number of individuals with a spell of unemployment of more than one year in this group was however too small to be considered representative of the behaviour of our sample and therefore cannot be presented in this paper.

8. Conclusion

Based on this analysis, we conclude that, in terms of frequency and duration of their transitions in the labour market, the experience of older workers does not appear to be much different from that of younger workers. Although the older workers included in our sample had a lower level of education than younger workers, some of their other characteristics, such as their experience in the labour market and their seniority, appear to compensate for their low level of education since, in general, older workers come out as well, if not better, than younger workers.

We also note that for older workers, as for younger workers, a high level of human capital generally translates into a stronger attachment to the labour force as well as more stable behaviour (longer spells of employment, fewer transitions, fewer spells of unemployment). Another observation is that the relationship between human capital and the type, frequency and length of workers' transitions was generally similar regardless of the age of the workers. Further, taking into account human capital levels usually reduces previously observed differences between age groups. Our findings also reveal that leaving the workforce is the main feature separating the behaviour of older workers from that of other workers.

In particular, we find that for the individuals in our sample, the length of unemployment spells of older workers was not statistically different on average from that of younger workers even if the percentage of long-term unemployed workers was slightly higher among older workers. We do, however, find one exception to this rule in the case of older workers with higher seniority: these individuals had longer unemployment spells than younger workers in the same seniority category.

The loss of the advantages associated with seniority, working in a declining industrial sector or having non-transferable skills may explain this phenomenon. However, while we do not deny that this situation deserves our attention, we must remember that the size of the group of older workers who find themselves in this situation is small compared with the group of younger workers who, in all categories of seniority combined, find themselves unemployed more often than older workers.

It is possible that a more detailed analysis may bring to light relationships not revealed in this paper, since our approach does not enable us to simultaneously control for all factors affecting the behaviour of older workers in the labour market. Thus, an econometric analysis of the transitions (duration models) of older workers might round out our findings by enabling us to isolate and measure the impact of selected independent variables on the time spent in a given state. By using this type of modelling, it would be possible, for example, to identify the main determinants of the duration of unemployment or out of the labour force spells and to simulate the impact of a change in the independent variables on the paths taken by older workers. Besides the impact of human capital on the transitions of older workers, this type of analysis could also enable us to determine the impact of public retirement programs or of the coordination of retirement decisions between spouses. These factors are usually considered important determinants of the behaviour of older workers in the labour force.[37]

Nevertheless, the conclusions that we have been able to draw from this analysis indicate that a detailed study should confirm that a majority of older workers do not experience major differences with regards to their transitions in the labour market compared with younger workers[38]. Thus, it would appear that the human capital that older workers have accumulated compensates for their lower level of education when these workers have to adjust. Our findings also lead us to believe that the proportion of older workers experiencing problems in the labour market should decrease with future cohorts given their higher levels of education.

[37] See among others Anderson, Gustman and Steinmeier (1999) and Blau and Riphahn (1999).

[38] However, when interpreting our findings, one must bear in mind that we excluded from our analysis individuals who were out of the labour force during the 5 years covered by our study. Older workers reintegrating the labour force after an extended leave likely have different experiences in terms of their transitions in the labour market and earnings compared to the population of older workers at study here.

Appendix A

Average number of spells between 1993 and 1997

Table A.1
Average number of spells between 1993 and 1997
Total sample by level of education

	No HSD	HSD or post-secondary studies	University graduates
Type of spell		**30-39 years of age**	
Employment	2.4	2.1	1.8
Unemployment	1.1	0.6	0.3
Out of the labour force	0.8	0.4	0.2
Total	**4.2**	**3.2**	**2.3**
		40-49 years of age	
Employment	2.2	1.9	1.6
Unemployment	0.9	0.5	0.3
Out of the labour force	0.6	0.4	0.2
Total	**3.7**	**2.8**	**2.0**
		50-60 years of age	
Employment	1.9	1.8	1.5
Unemployment	0.7	0.5	0.2
Out of the labour force	0.8	0.5	0.4
Total	**3.4**	**2.8**	**2.2**

Table A.2
Average number of spells between 1993 and 1997
Total sample by seniority

	5 or fewer years	Between 5 and 10 years	More than 10 years
Type of spell		**30-39 years of age**	
Employment	3.2	1.8	1.5
Unemployment	1.5	0.3	0.2
Out of the labour force	1.1	0.2	0.1
Total	**5.8**	**2.3**	**1.8**
		40-49 years of age	
Employment	3.3	1.8	1.4
Unemployment	1.8	0.3	0.2
Out of the labour force	1.1	0.2	0.1
Total	**6.1**	**2.4**	**1.7**
		50-60 years of age	
Employment	2.9	1.8	1.5
Unemployment	1.7	0.4	0.2
Out of the labour force	1.3	0.5	0.4
Total	**5.9**	**2.6**	**2.1**

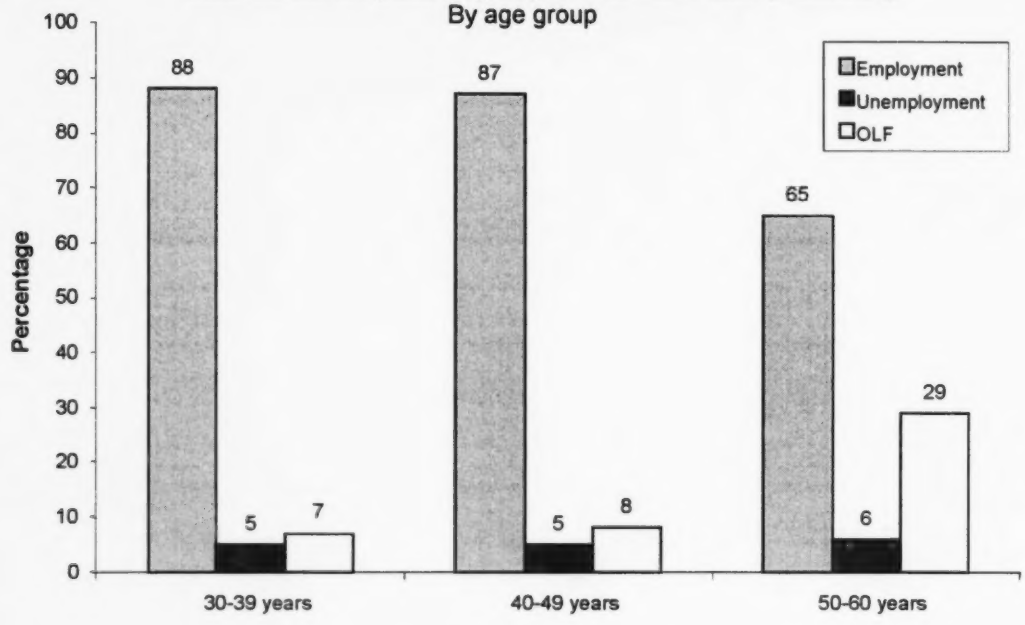
Table A.3
Average number of spells between 1993 and 1997
Total sample by skill level

	Knowledge and management	Data	Services	Goods
Type of spell		**30-39 years of age**		
Employment	1.8	2.0	2.1	2.4
Unemployment	0.3	0.6	0.7	0.9
Out of the labour force	0.2	0.4	0.6	0.5
Total	**2.4**	**3.0**	**3.3**	**3.8**
		40-49 years of age		
Employment	1.7	1.8	1.8	2.2
Unemployment	0.3	0.5	0.5	0.8
Out of the labour force	0.2	0.3	0.4	0.5
Total	**2.2**	**2.6**	**2.8**	**3.5**
		50-60 years of age		
Employment	1.6	1.6	1.8	2.2
Unemployment	0.3	0.3	0.5	0.8
Out of the labour force	0.4	0.6	0.7	0.7
Total	**2.3**	**2.5**	**3.0**	**3.6**

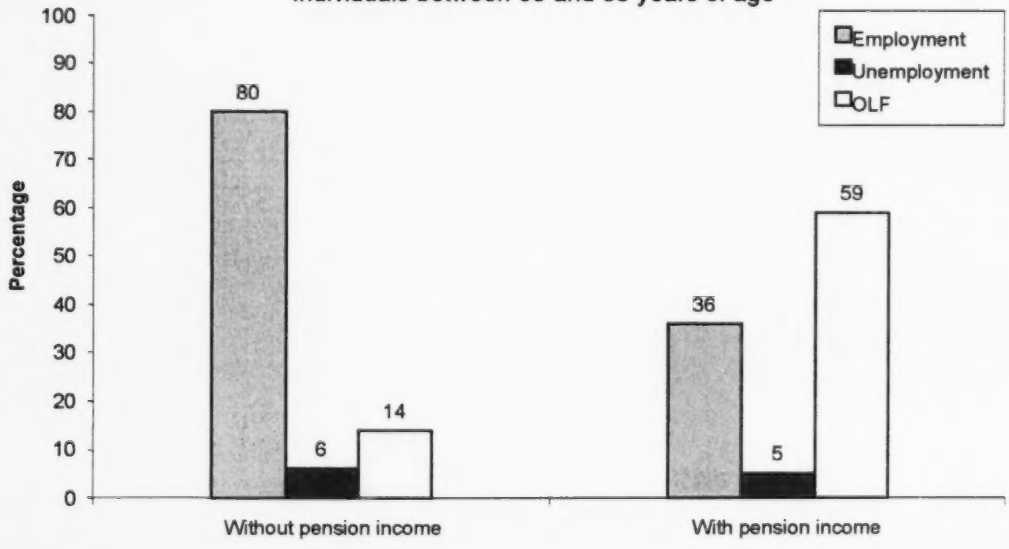
Appendix B

Distribution of spells ongoing in December 1997 (censored)

Graph B.1
Distribution of spells ongoing in December 1997 (censored)
By age group



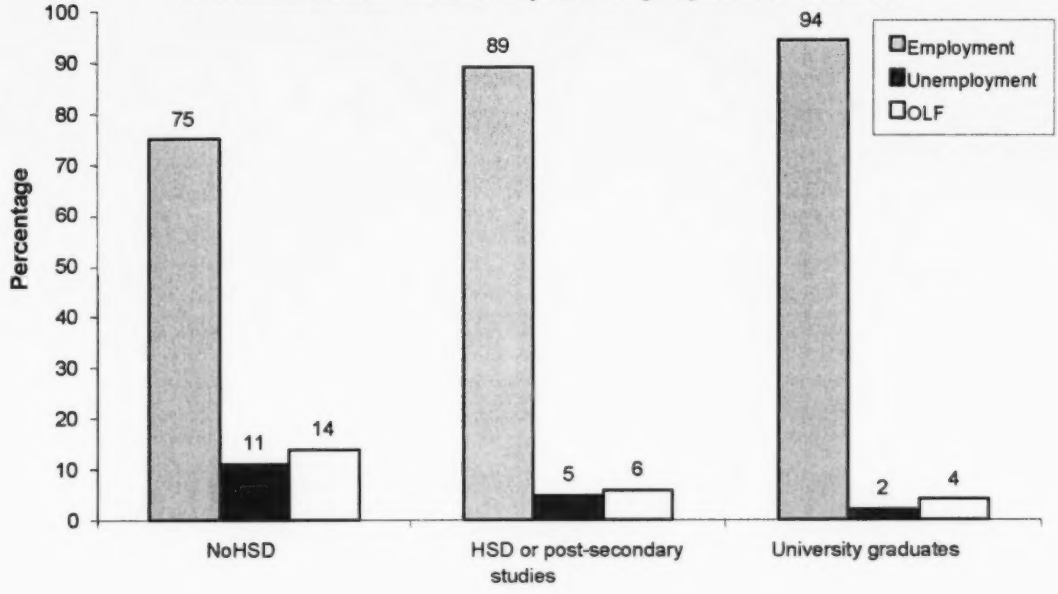
Graph B.2
Distribution spells ongoing in December 1997 (censored)
Individuals between 50 and 60 years of age



Graph B.3

Distribution of spells ongoing in December 1997 (censored)

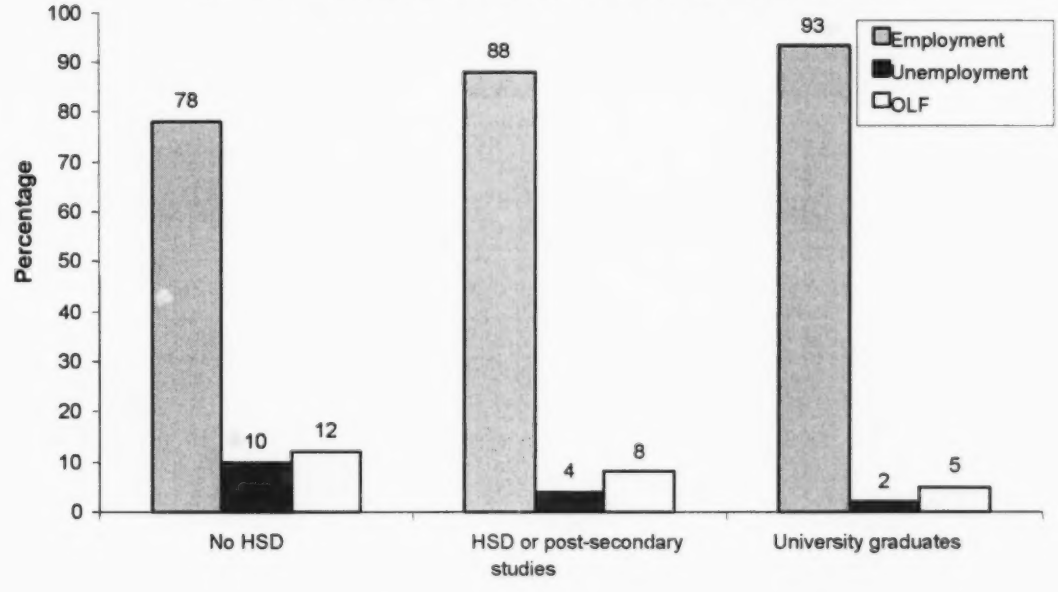
Individuals between 30 and 39 years of age by level of education



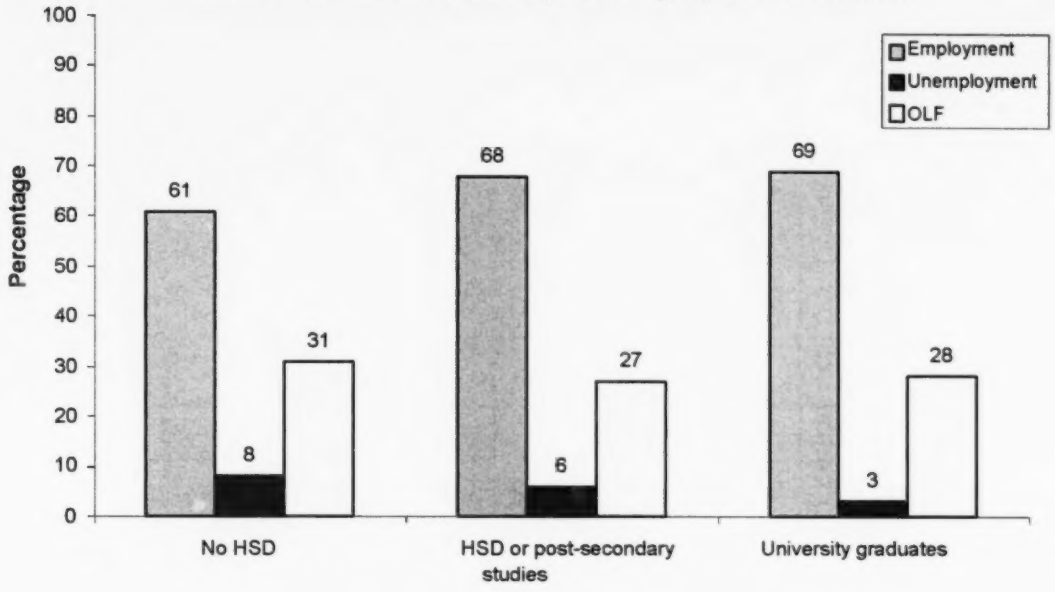
Graph B.4

Distribution of spells ongoing in December 1997 (censored)

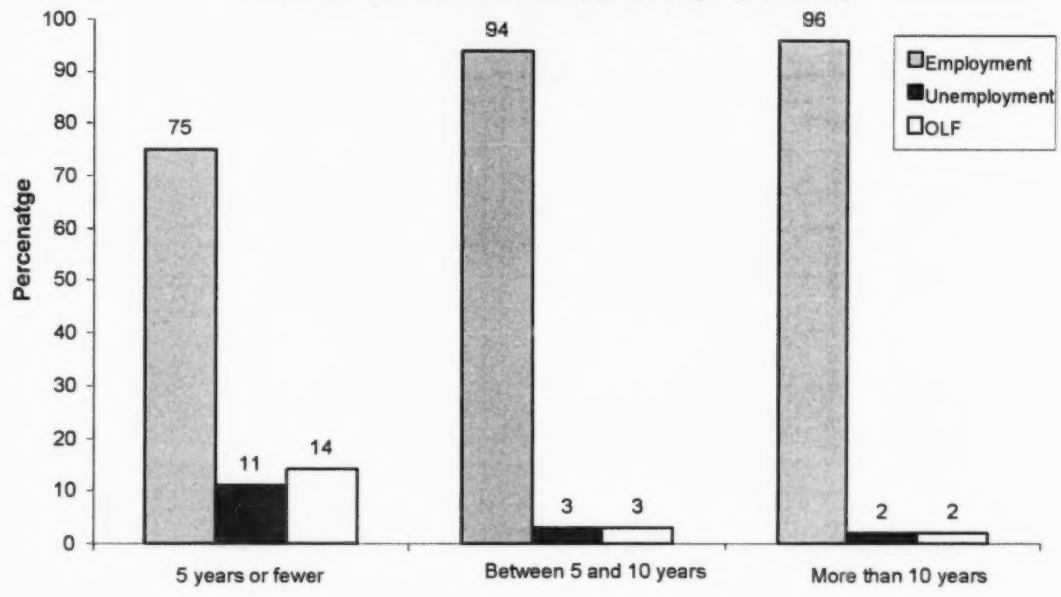
Individuals between 40 and 49 years of age by level of education



Graph B.5
Distribution of spells ongoing in December 1997 (censored)
Individuals between 50 and 60 years of age by level of education



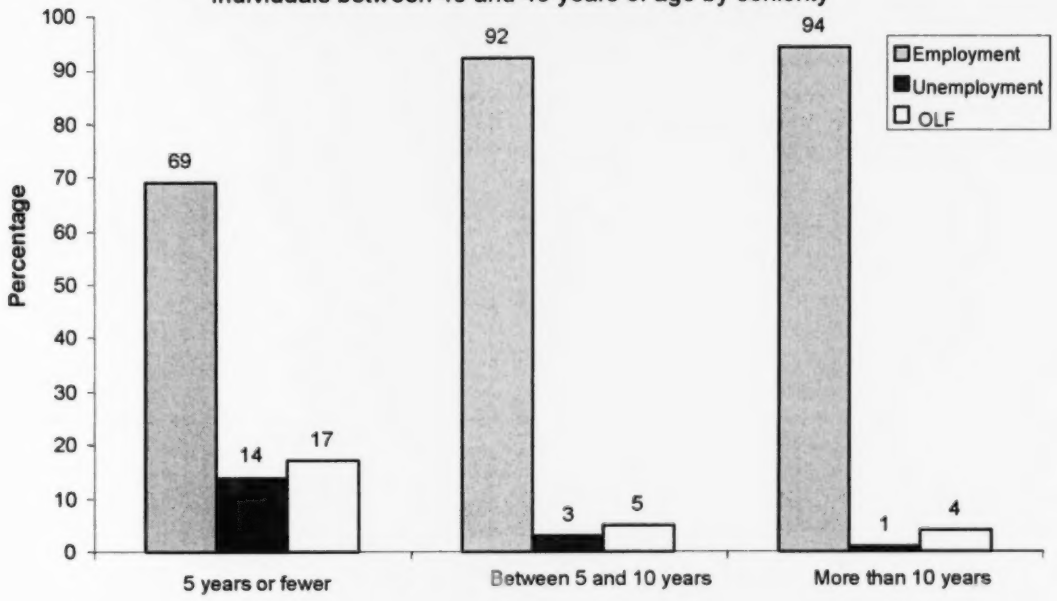
Graph B.6
Distribution of spells ongoing in December 1997 (censored)
Individuals between 30 and 39 years of age by seniority



Graph B.7

Distribution of spells ongoing in December 1997 (censored)

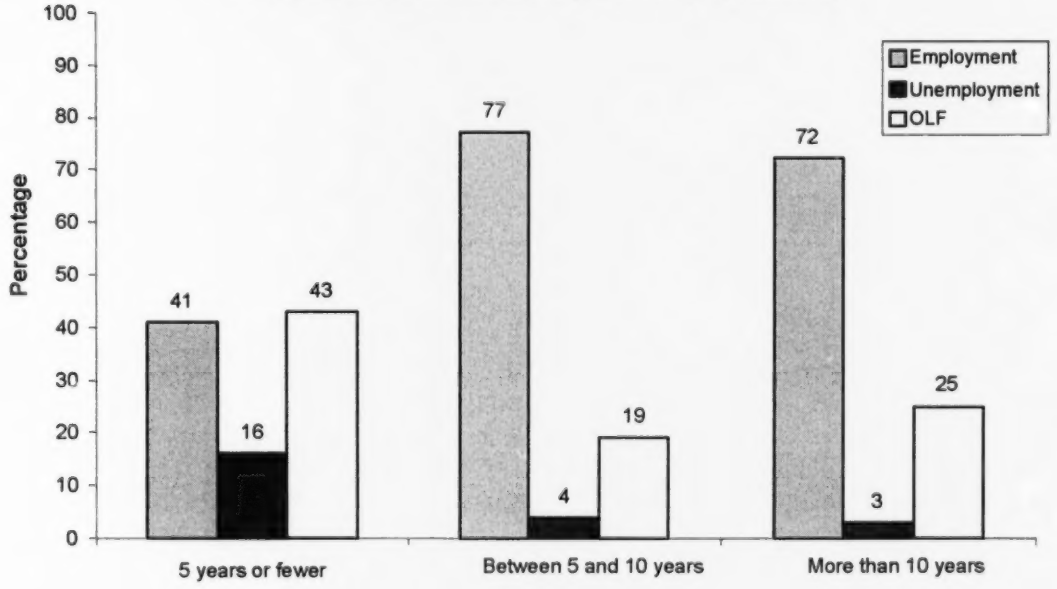
Individuals between 40 and 49 years of age by seniority



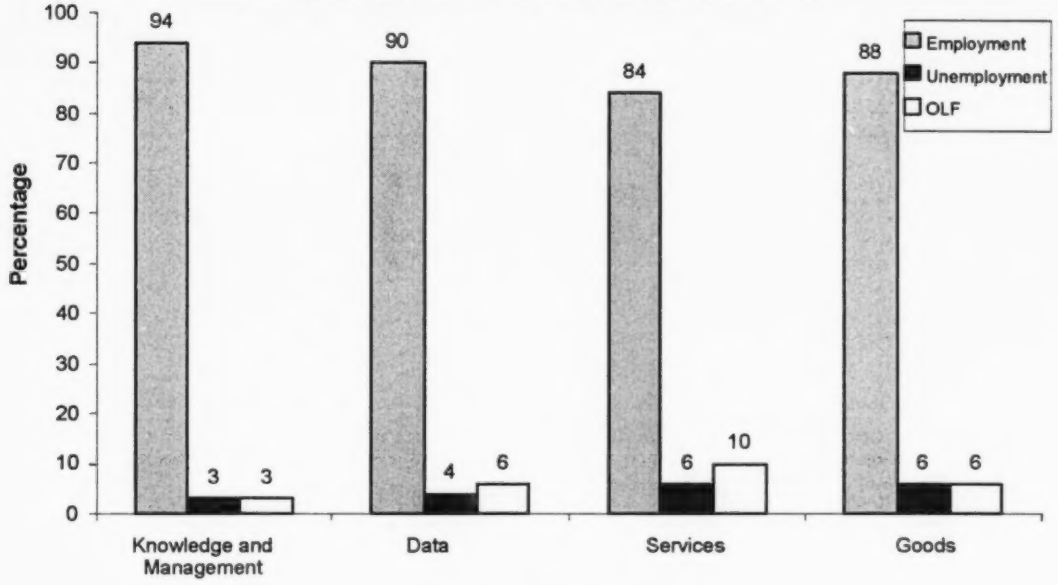
Graph B.8

Distribution of spells ongoing in December 1997 (censored)

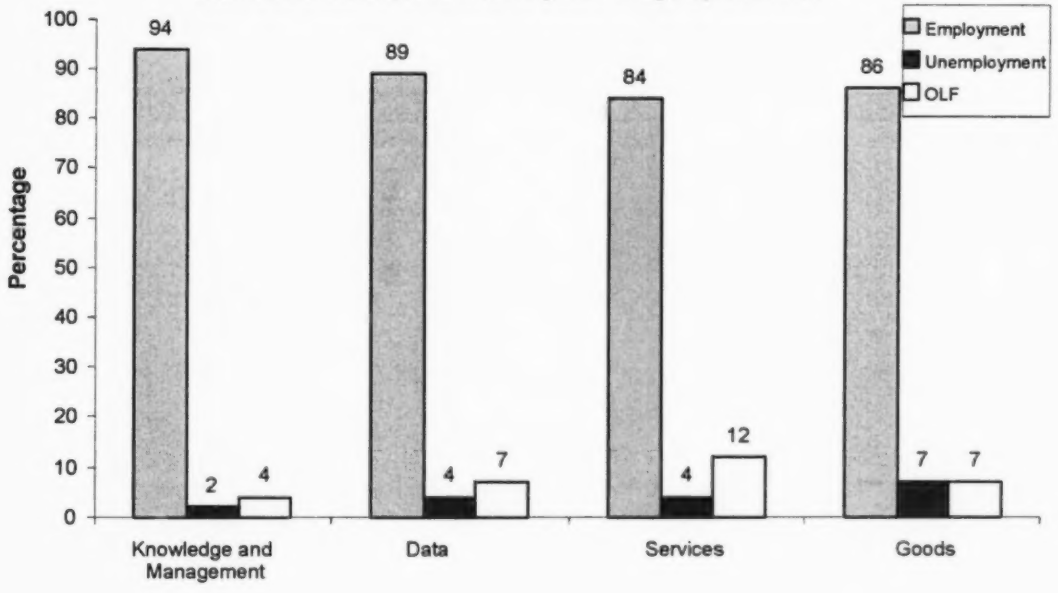
Individuals between 50 and 60 years of age by seniority



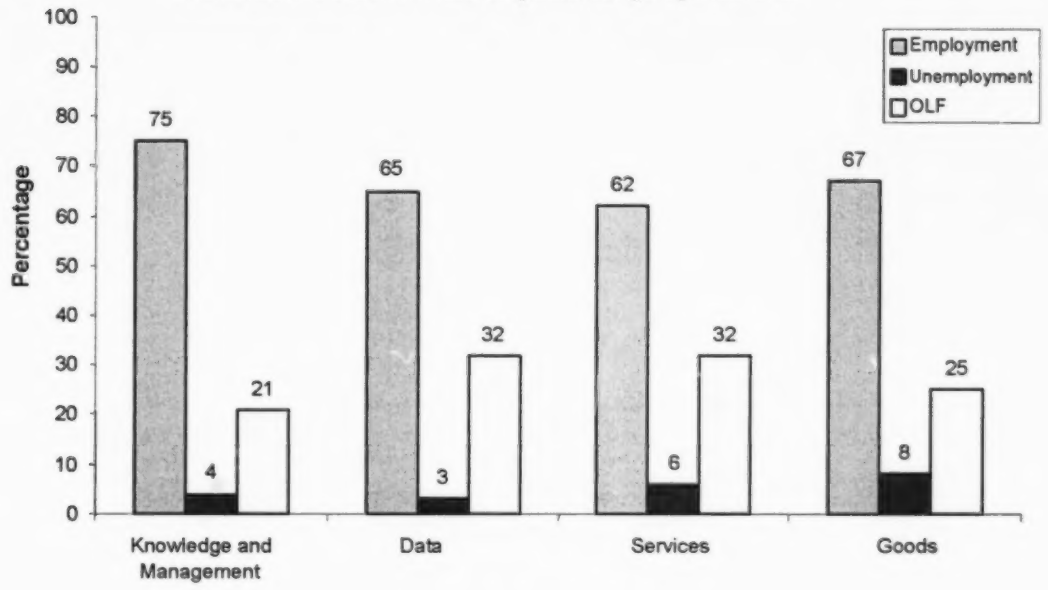
Graph B.9
Distribution of spells ongoing in December 1997 (censored)
Individuals between 30 and 39 years of age by skill level



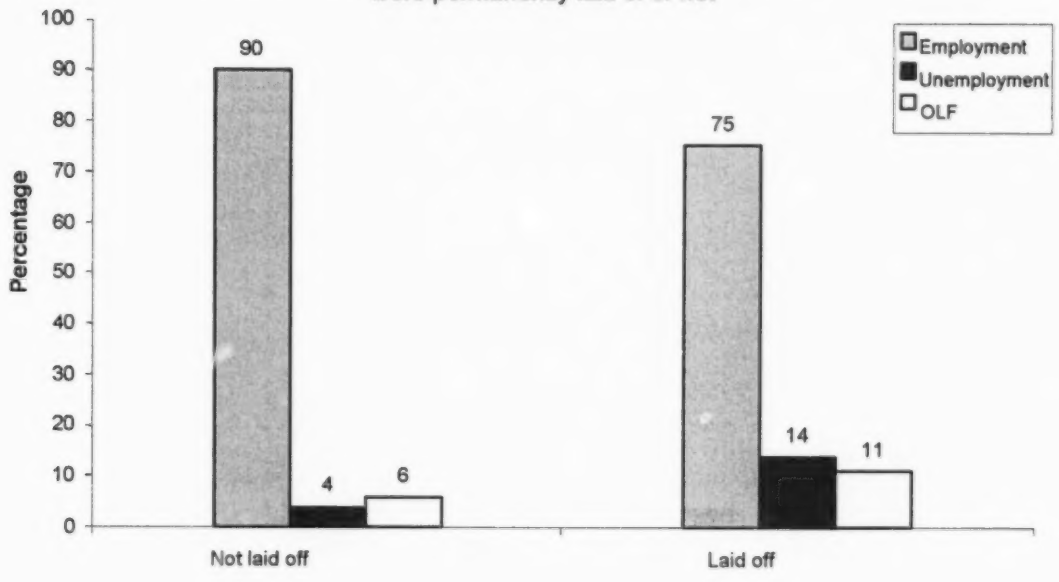
Graph B.10
Distribution of spells ongoing in December 1997 (censored)
Individuals between 40 and 49 years of age by skill level



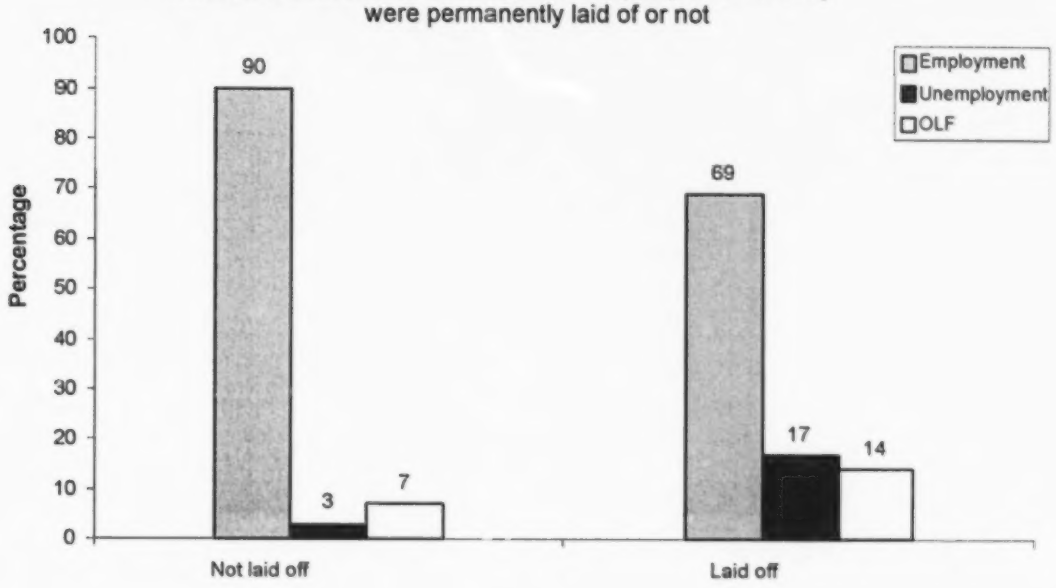
Graph B.11
Distribution of spells ongoing in December 1997 (censored)
Individuals between 50 and 60 years of age by skill level



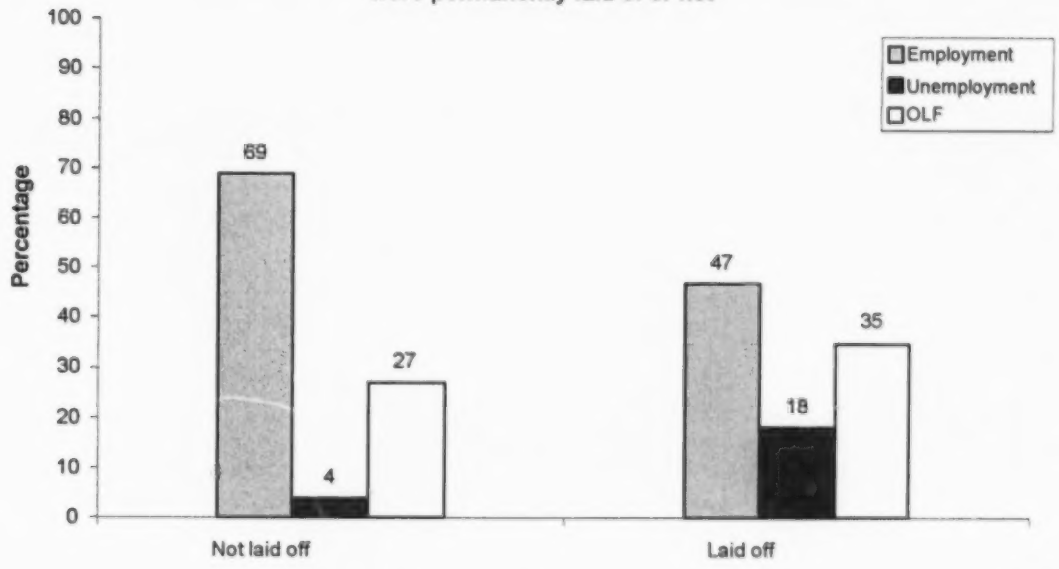
Graph B.12
Distribution of spells ongoing in December 1997 (censored)
Individuals between 30 and 39 years of age by whether they were permanently laid of or not



Graph B.13
Distribution of spells ongoing in December 1997 (censored)
Individuals between 40 and 49 years of age by whether they were permanently laid of or not



Graph B.14
Distribution of spells ongoing in December 1997 (censored)
Individuals between 50 and 60 years of age by whether they were were permanently laid of or not

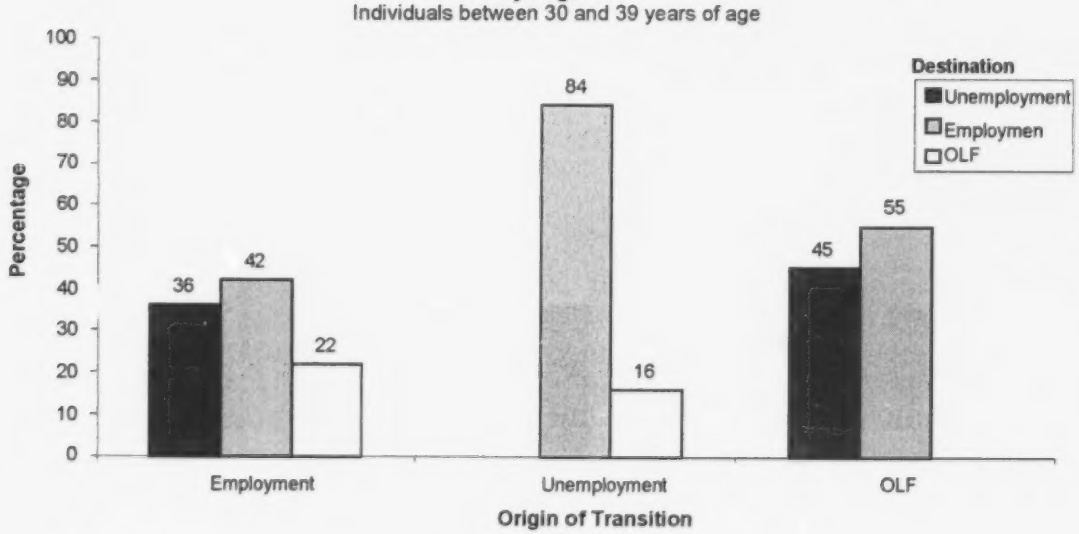


Appendix C

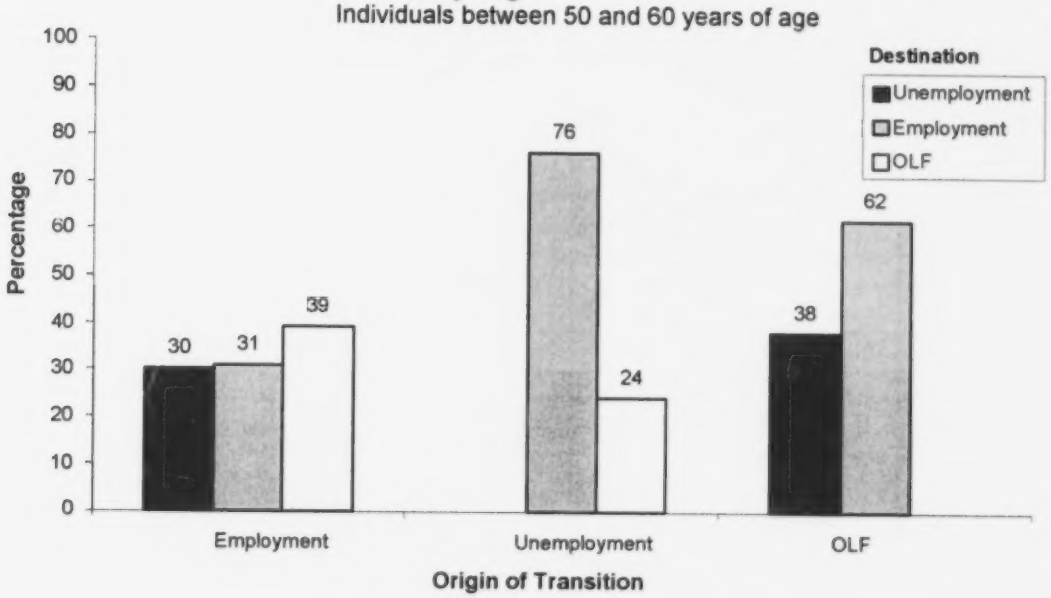
Distribution of spells completed between 1993 and 1997

Graph C.1
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age

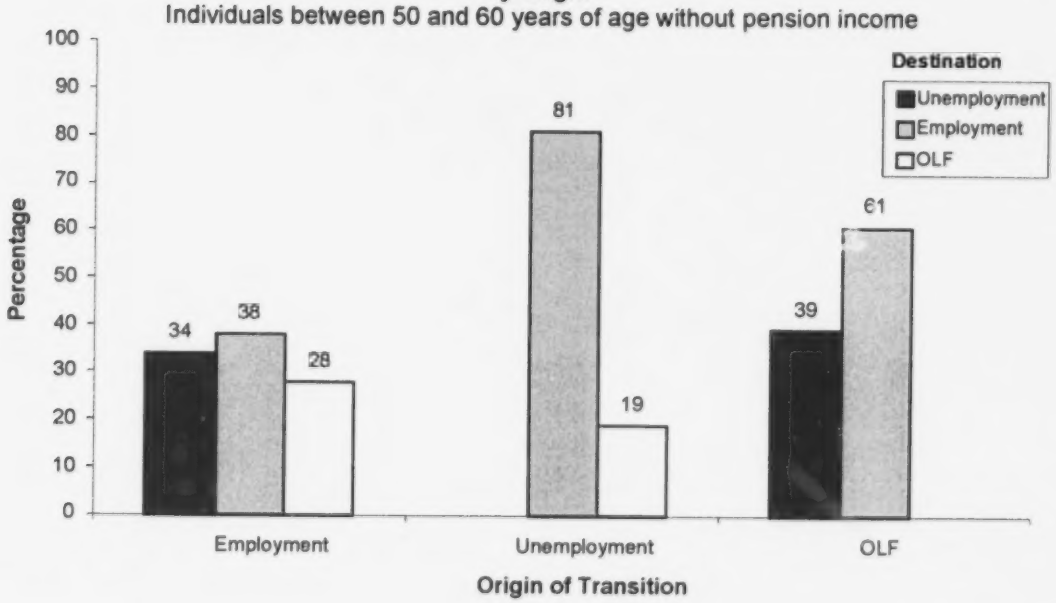
Graph C.2
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age



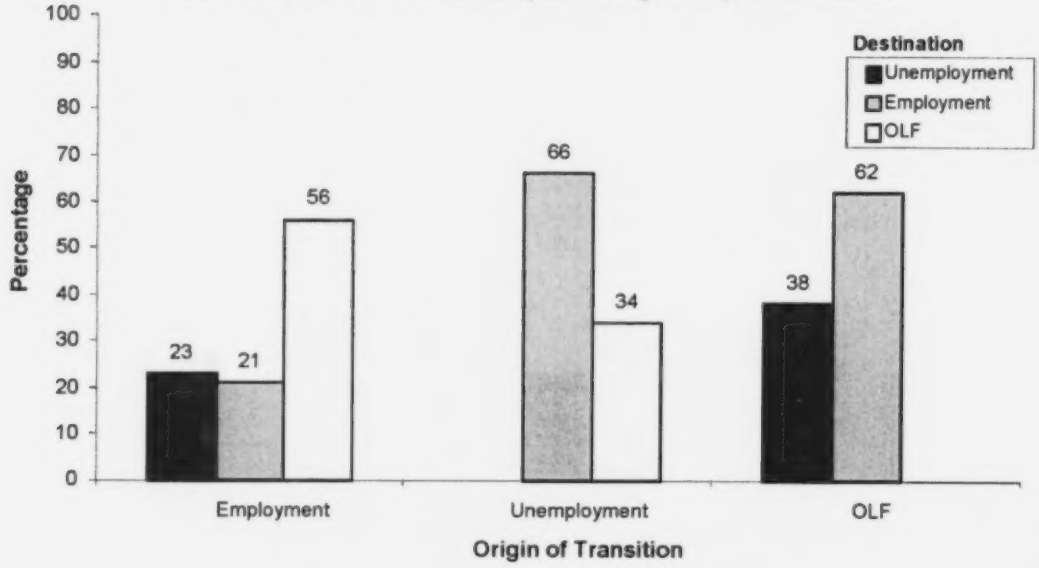
Graph C.3
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age



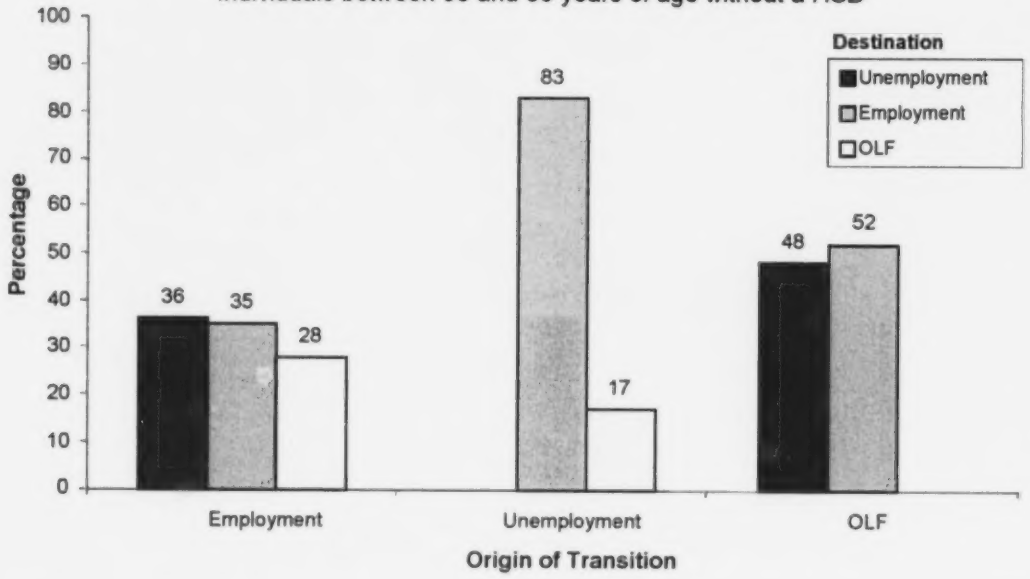
Graph C.4
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age without pension income



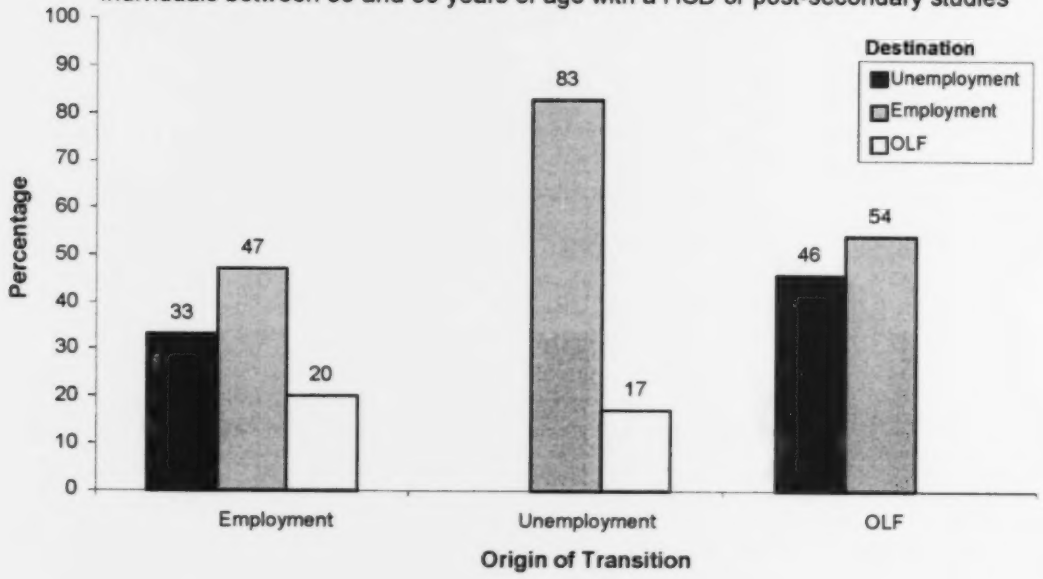
Graph C.5
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age with pension income



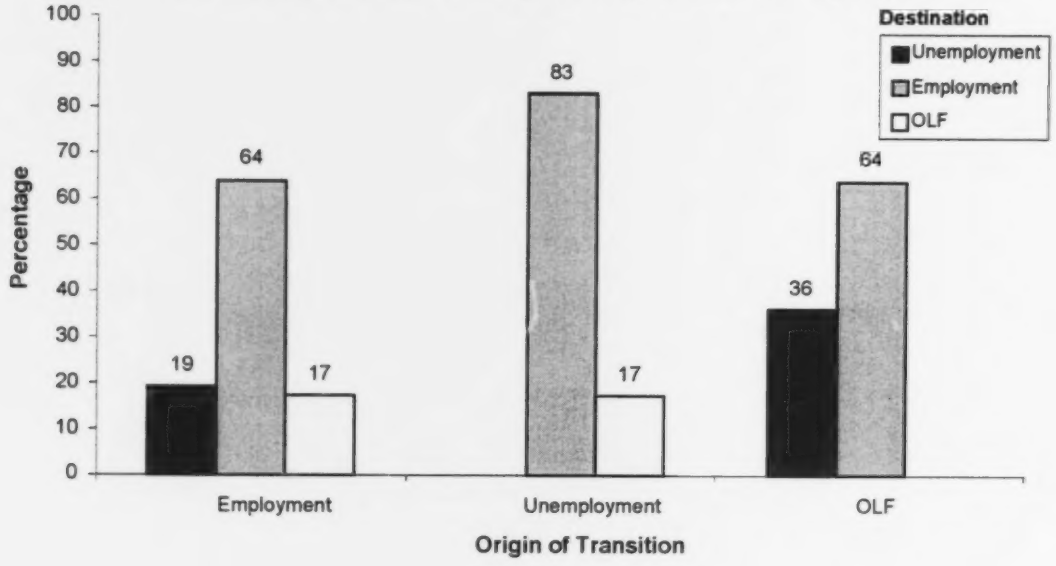
Graph C.6
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age without a HSD



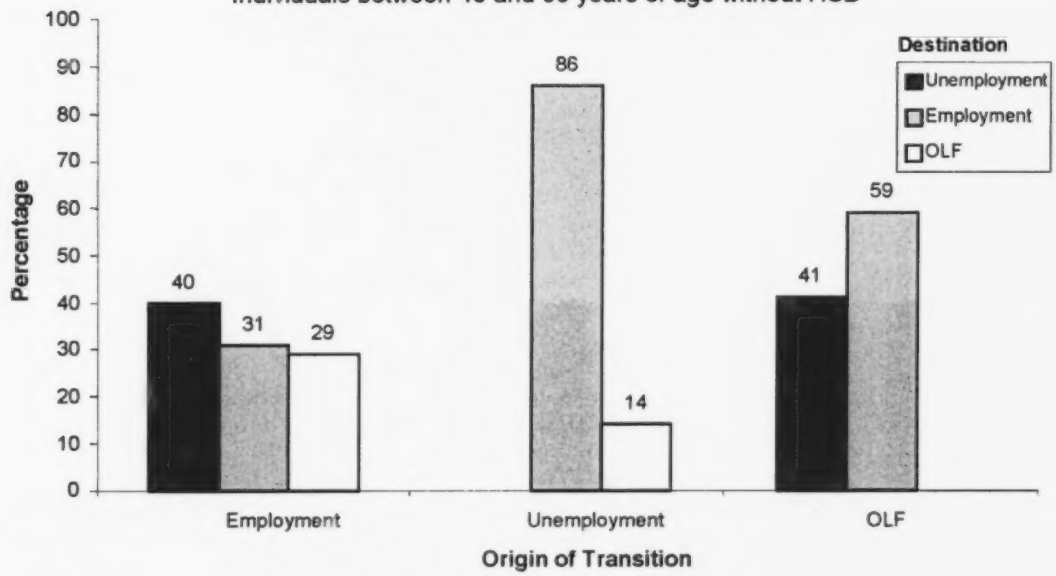
Graph C.7
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with a HSD or post-secondary studies



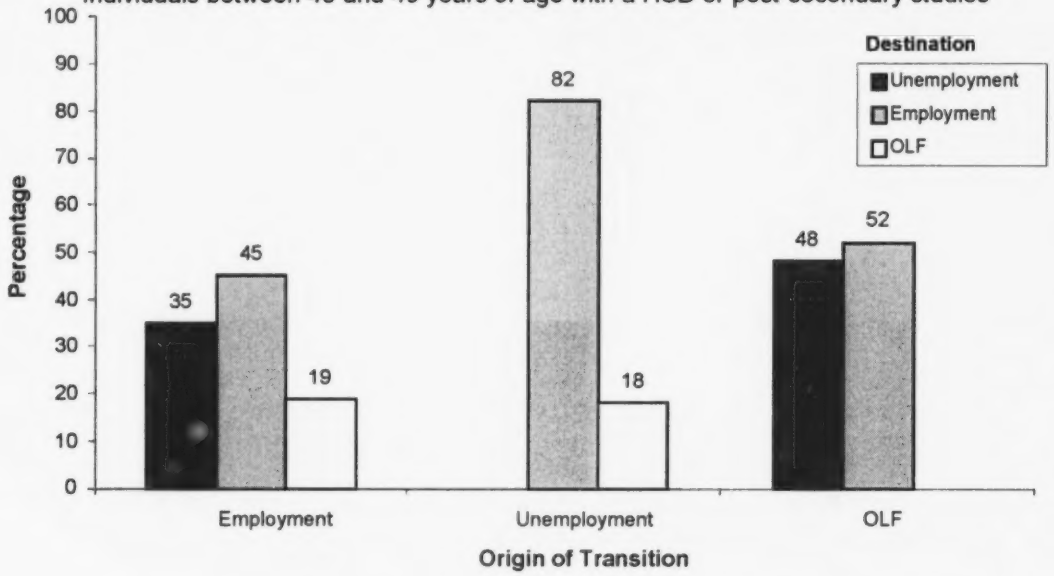
Graph C.8
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with a university degree



Graph C.9
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 99 years of age without HSD

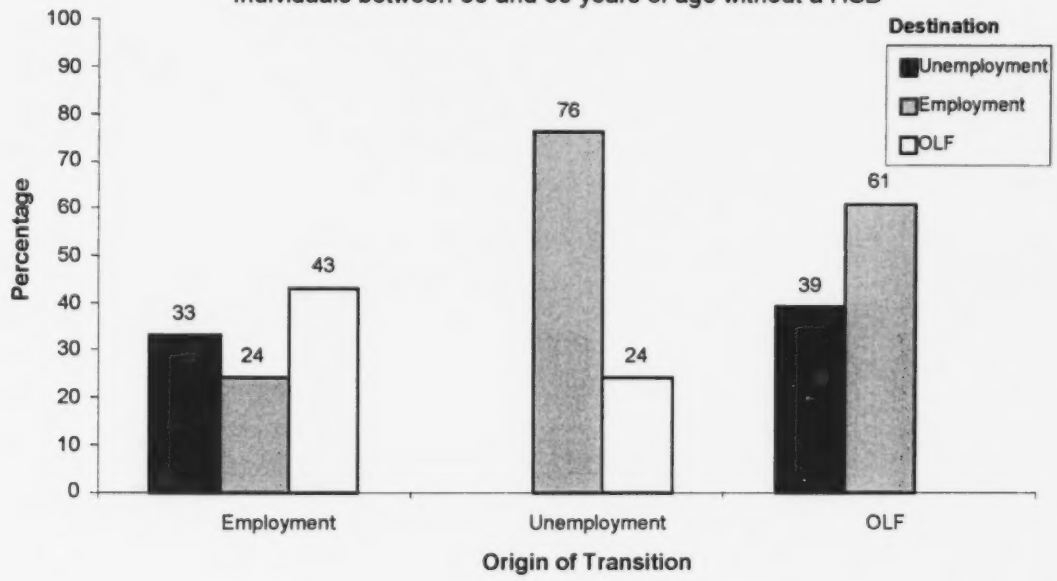


Graph C.10
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age with a HSD or post-secondary studies

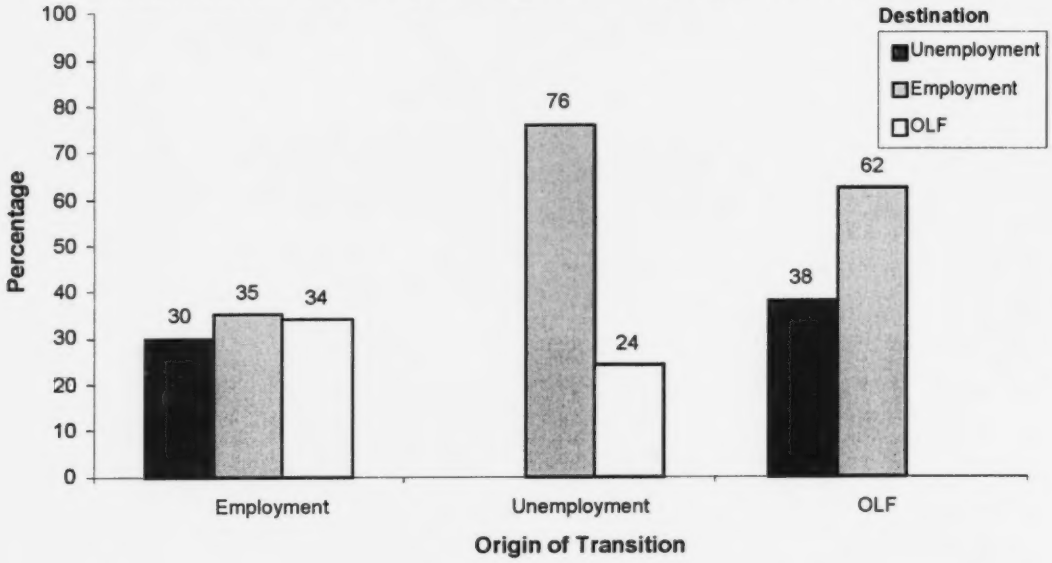


Graph C.11
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age with a university degree

Graph C.12
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age without a HSD



Graph C.13
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age with a HSD or post-secondary studies

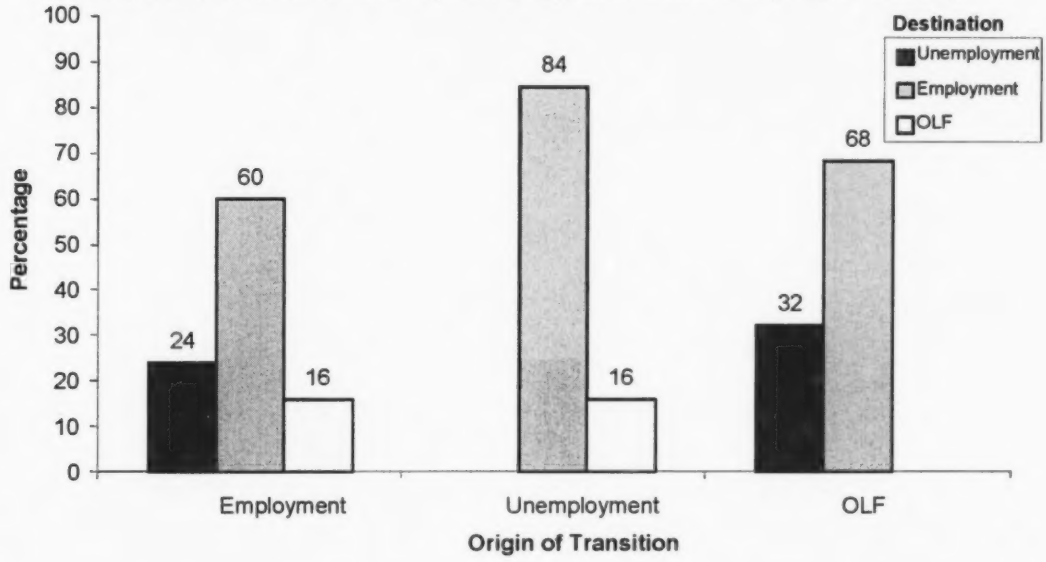


Graph C.14
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age with a university degree

Graph C.15
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with 5 years or fewer of seniority

Graph C.16
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with between 5 and 10 years of seniority

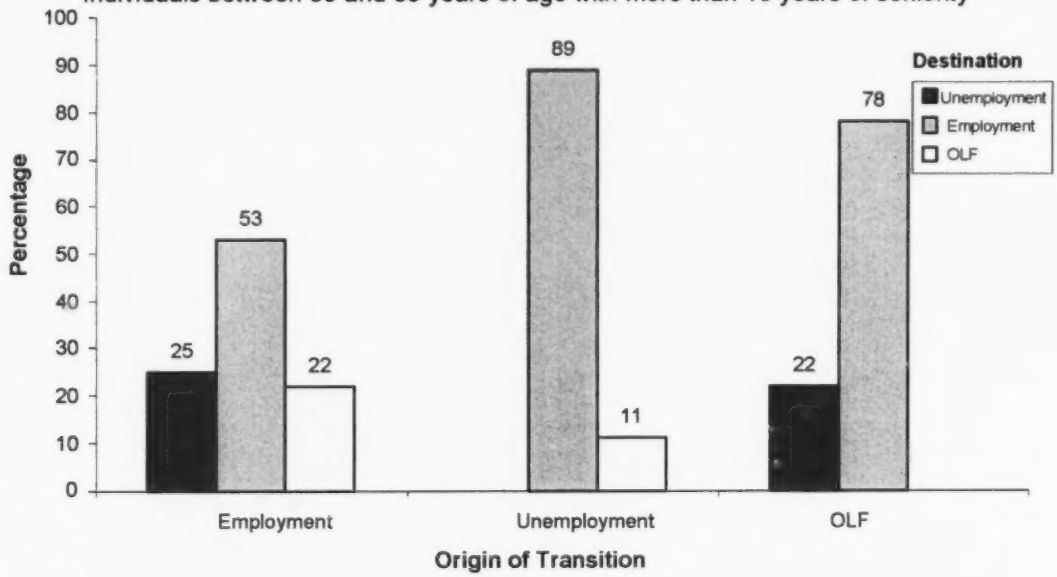
Graph C.17
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with more than 5 years of seniority



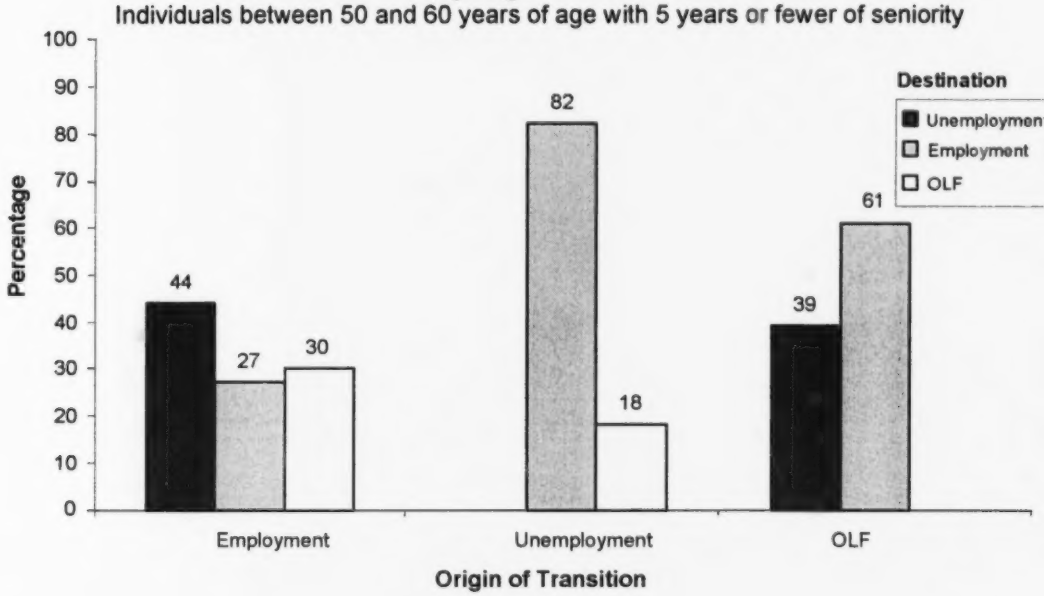
Graph C.18
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age with 5 years or fewer of seniority

Graph C.19
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with between 5 and 10 years of seniority

Graph C.20
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age with more than 10 years of seniority

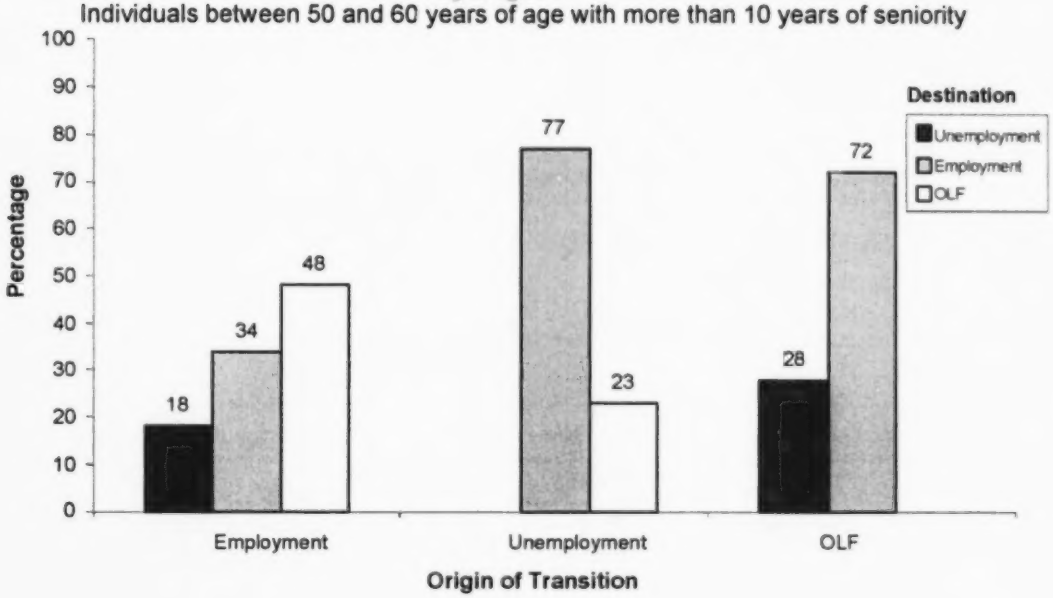


Graph C.21
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age with 5 years or fewer of seniority

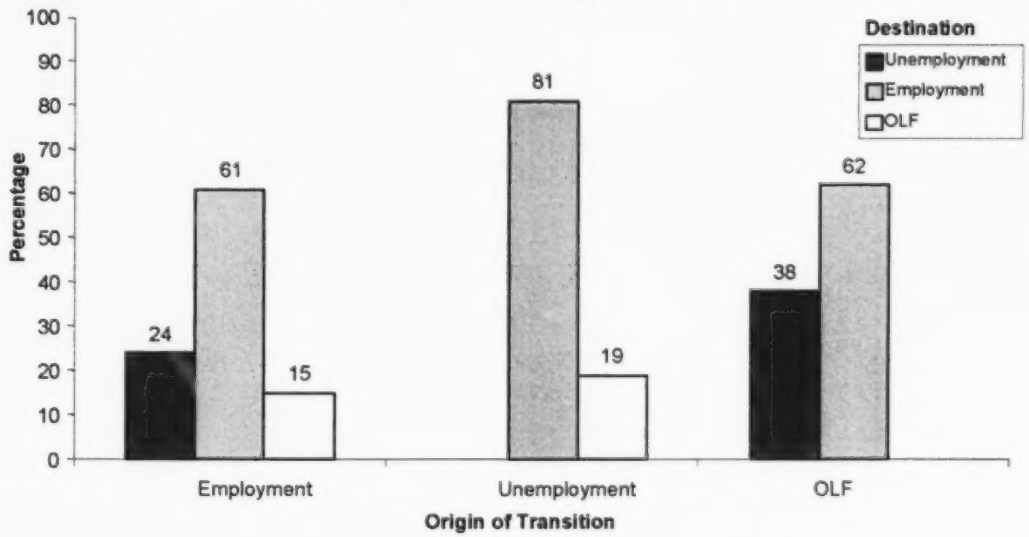


Graph C.22
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age with between 5 and 10 years of seniority

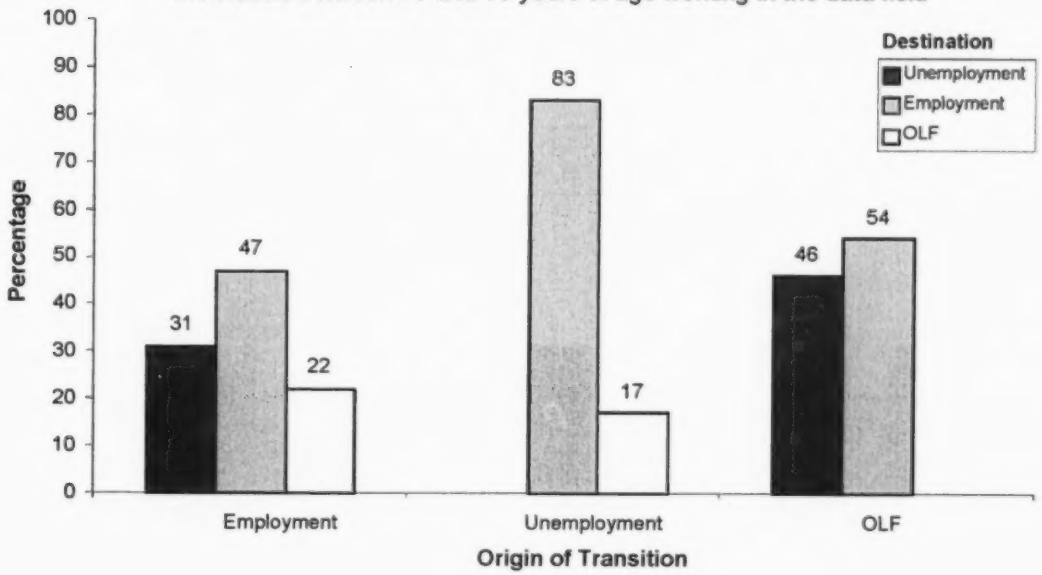
Graph C.23
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age with more than 10 years of seniority



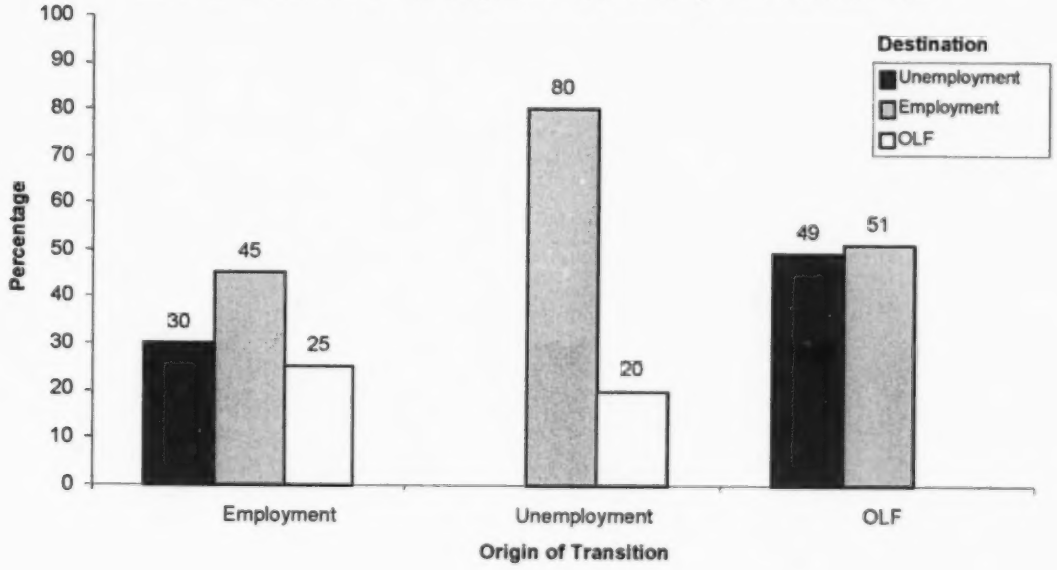
Graph C.24
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age working in the knowledge and management field



Graph C.25
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age working in the data field



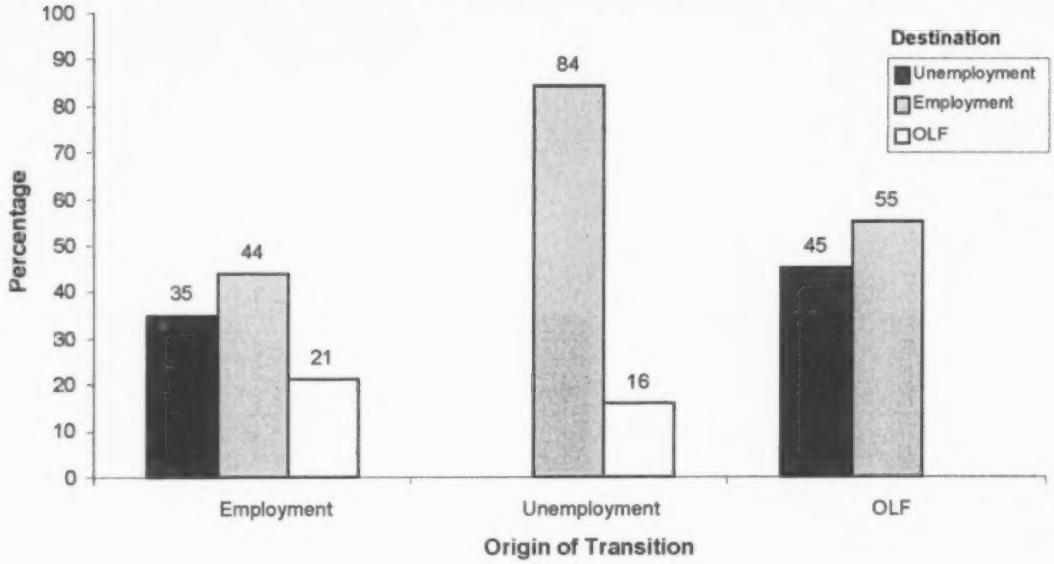
Graph C.26
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age working in the services field



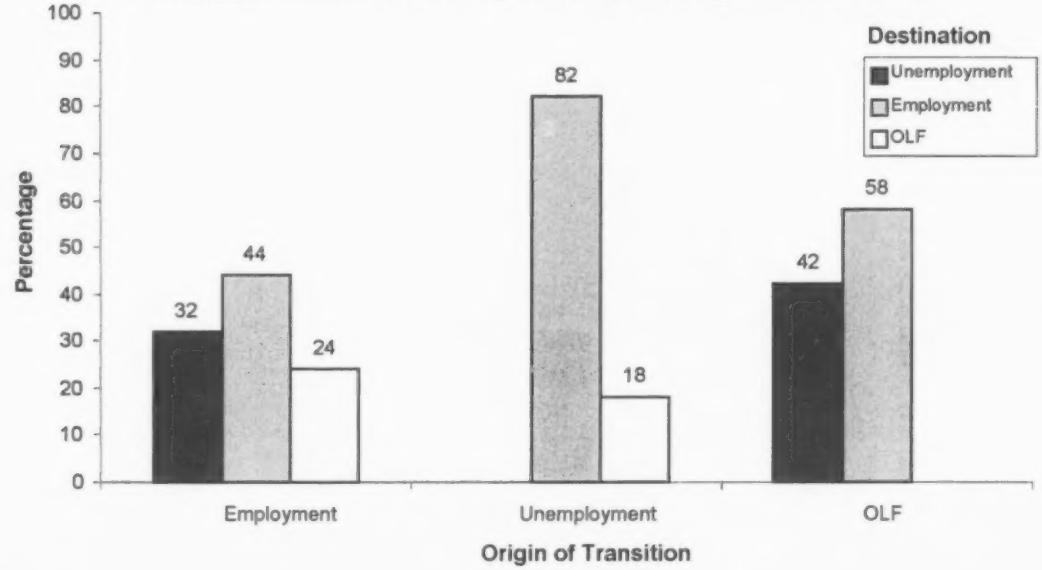
Graph C.27
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age working in the goods field

Graph C.28
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of ageworking in the knowledge and management field

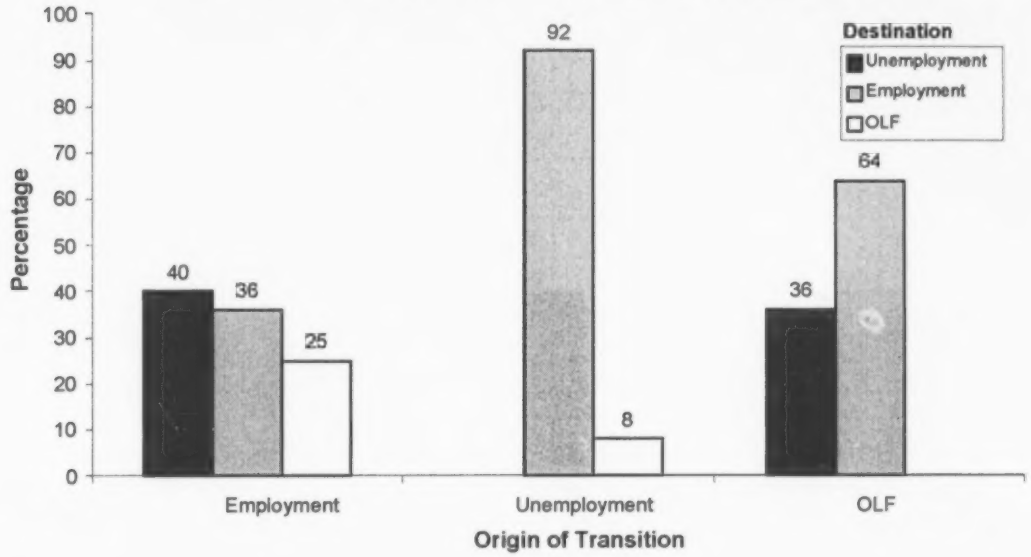
Graph C.29
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age working in the data field



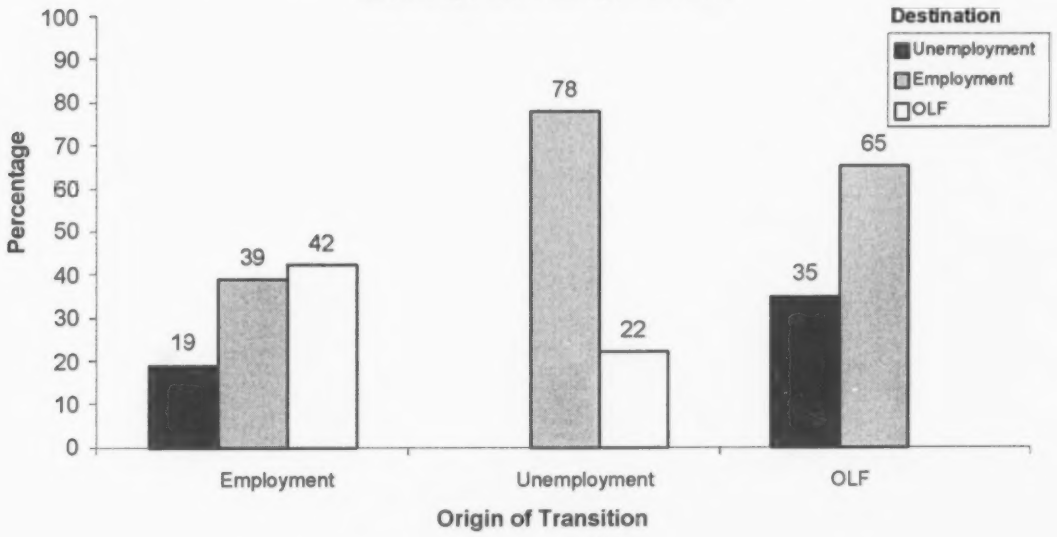
Graph C.30
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age working in the services field



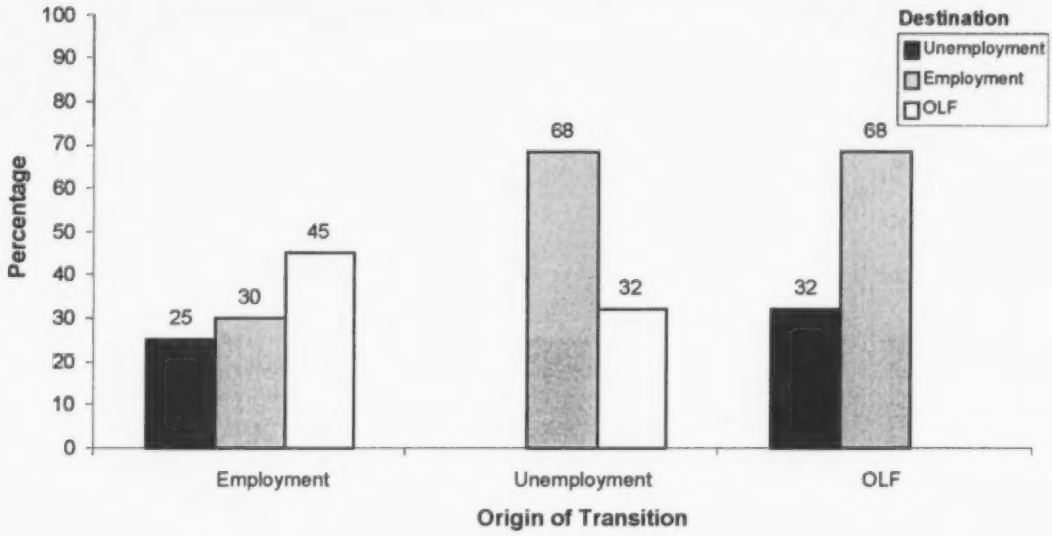
Graph C.31
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age working in the goods field



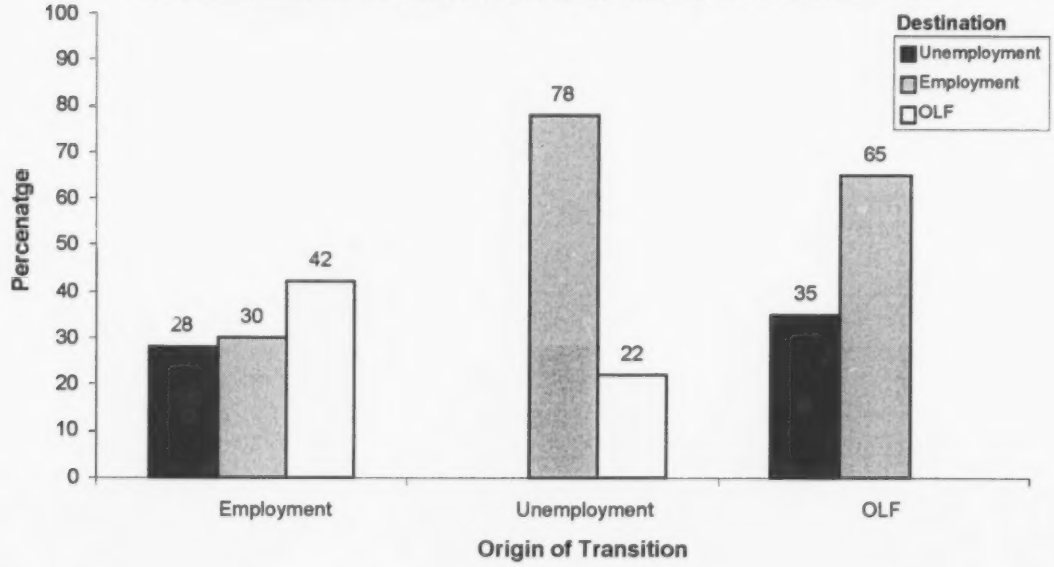
Graph C.32
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age working in the knowledge and management field



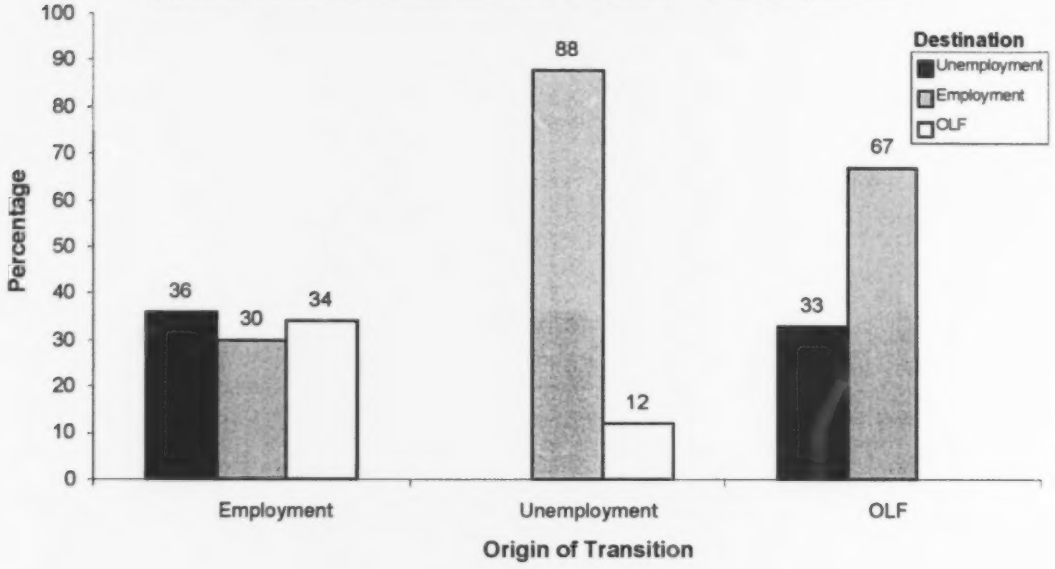
Graph C.33
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age working in the data field



Graph C.34
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age working in the services field

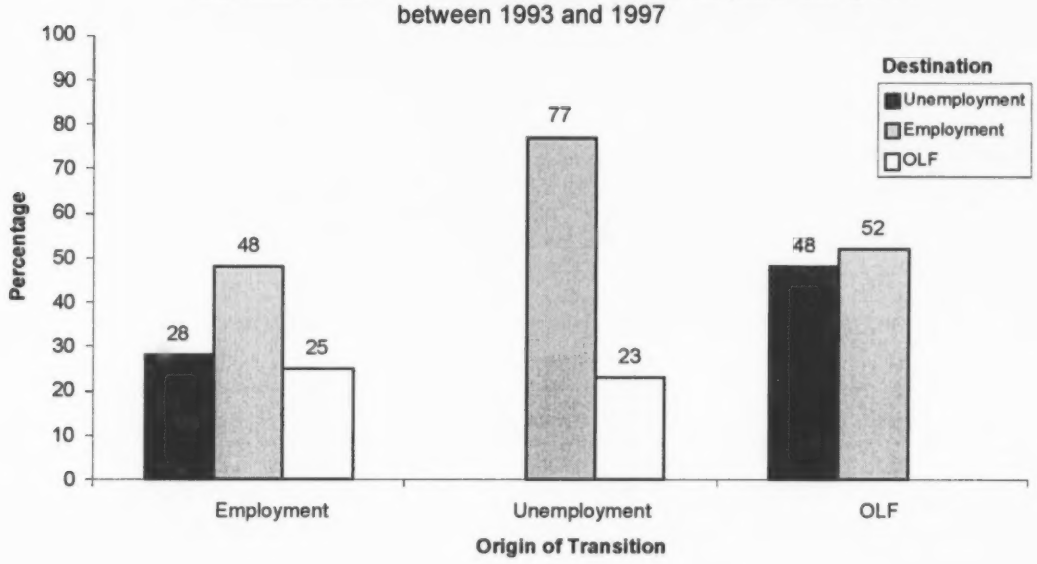


Graph C.35
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age working in the goods field

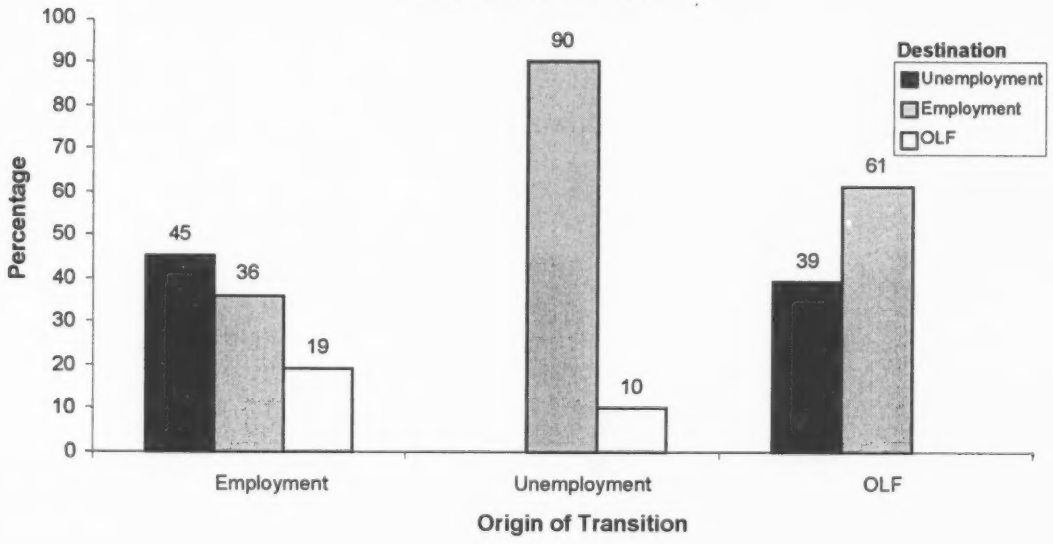


Graph C.36
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age permanently laid off between 1993 and 1997

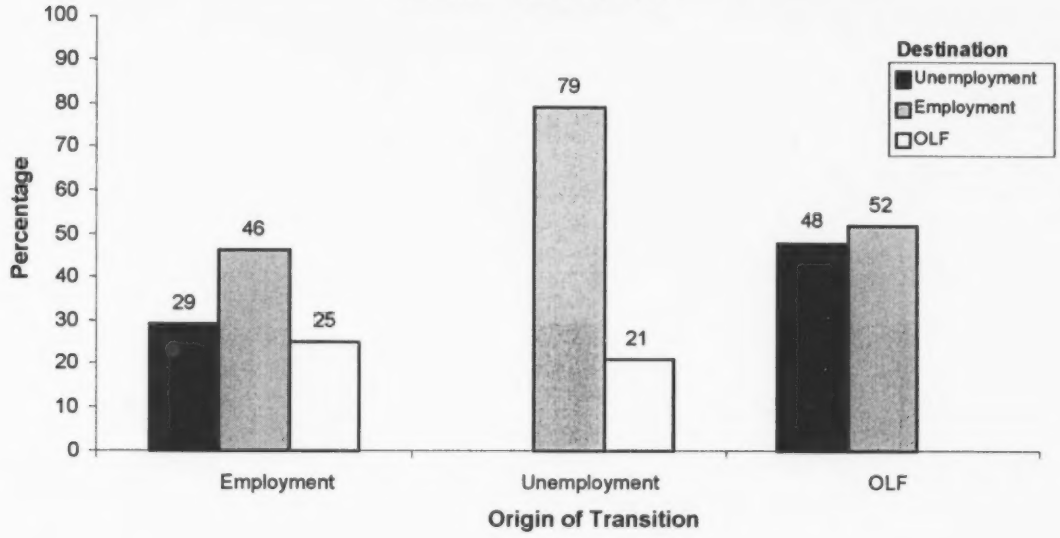
Graph C.37
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 30 and 39 years of age not permanently laid between 1993 and 1997



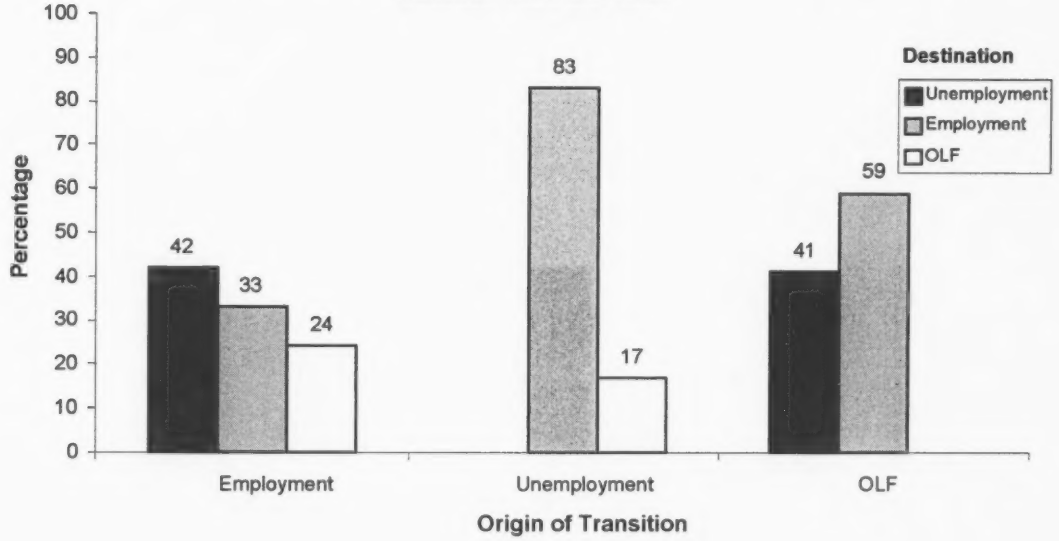
Graph C.38
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age not permanently laid off between 1993 and 1997



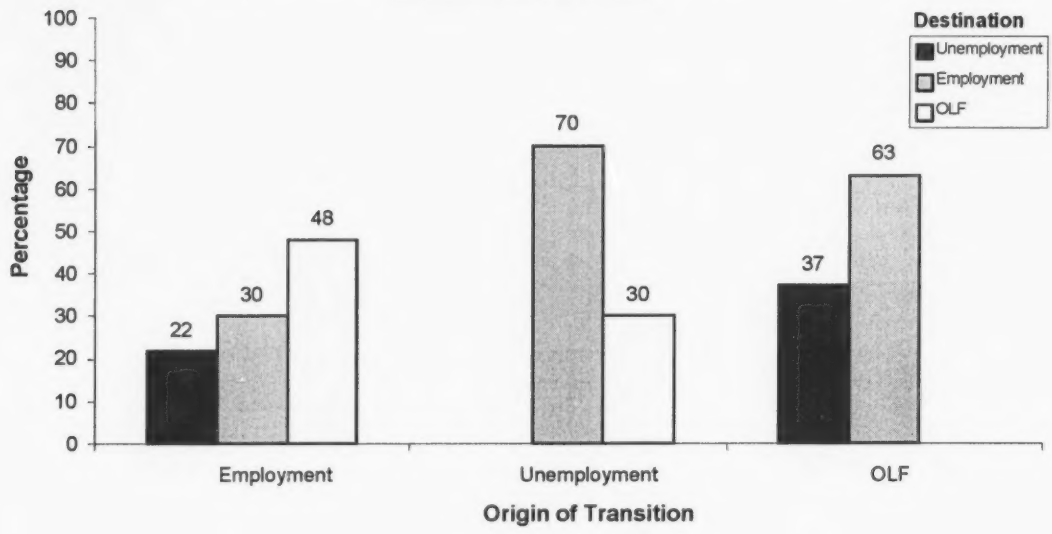
Graph C.39
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 40 and 49 years of age permanently laid off between 1993 and 1997



Graph C.40
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age permanently laid off between 1993 and 1997



Graph C.41
Distribution of spells completed between 1993 and 1997 by origin
Individuals between 50 and 60 years of age not permanently laid off between 1993 and 1997



Appendix D

Matrices of spells duration (months)

Matrices of spells duration (months): Total sample

Table D.1: 30-39 years of age

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	41.6	29.1	32.1	101.1	*35.5*
Unemployment	6.3		7.4	13.5	*6.5*
OLF	16.2	21.8		14.5	*18.8*

N = 4333 individuals

Table D.2: 40-49 years of age

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	64.4	42.8	65.6	150.8	*56.9*
Unemployment	6.6		11.0	16.7	*7.3*
OLF	18.3	25.1		16.9	*21.3*

N = 3320 individuals

Table D.3: 50-60 years of age

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	77.1	53.2	142.1	185.3	*95.3*
Unemployment	6.7		10.1	13.8	*7.6*
OLF	17.5	20.5		22.7	*18.7*

N = 1936 individuals

Matrices of spells duration (months): Individuals between 50 and 60 years of age

Table D.4: 50-60 years of age without pension income

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	68.6	43.7	101.8	195.7	*69.5*
Unemployment	6.2		8.9	14.5	*6.8*
OLF	18.8	19.4		19.9	*19.0*

N = 1302 individuals

Table D.5: 50-60 years of age with pension income

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	102.1	76.1	174.7	137.6	*137.1*
Unemployment	8.0		11.6	11.9	*9.2*
OLF	15.5	22.4		24.1	*18.1*

N = 634 individuals

Matrices of spells duration (months): Individuals between 30 and 39 years of age by level of education

Table D.6: 30-39 years of age without a HSD

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	36.7	25.5	24.4	94.4	*29.1*
Unemployment	7.1		10.3	19.4	*7.6*
OLF	13.8	22.6		11.5	*18.0*

N = 751 individuals

Table D.7: 30-39 years of age with a HSD or post-secondary studies

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	42.2	30.4	35.4	102.0	*36.9*
Unemployment	6.0		6.1	10.4	*6.0*
OLF	16.1	22.1		15.2	*18.9*

N = 2928 individuals

Table D.8: 30-39 years of age with a university degree

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	45.0	30	34.5	103.5	*40.3*
Unemployment	6.7		9.7	7.4	*7.2*
OLF	22.8	13		22.0	*19.3*

N = 638 individuals

Matrices of spells duration (months): Individuals between 40 and 49 years of age by level of education

Table D.9: 40-49 years of age without a HSD

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	64.1	34.8	55.8	146.9	*49.9*
Unemployment	6.4		14.1	22.8	*7.5*
OLF	14.1	23.9		16.9	*18.1*

N = 741 individuals

Table D.10: 40-49 years of age with a HSD or post-secondary studies

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	60.5	44.4	65.7	149.1	*55.8*
Unemployment	6.7		7.5	12.1	*6.9*
OLF	21.8	25.3		17.1	*23.5*

N = 1918 individuals

Table D.11: 40-49 years of age with a university degree

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	79.4	64.8	108.2	158.6	*80.1*
Unemployment	6.5		21.7	12.1	*9.4*
OLF	19.1	26.5		16.7	*22.2*

N = 639 individuals

Matrices of spells duration (months): Individuals between 50 and 60 years of age by level of education

Table D.12: 50-60 years of age without a HSD

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	67.6	43.7	114.4	180.8	*79.8*
Unemployment	7.4		9.5	17.4	*7.9*
OLF	17.7	19.0		23.7	*18.2*

N = 733 individuals

Table D.13: 50-60 years of age with a HSD or post-secondary studies

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	77.8	60.3	155.4	181.1	*99.2*
Unemployment	6.1		10.5	10.1	*7.1*
OLF	17.8	17.8		22.5	*17.8*

N = 912 individuals

Table D.14: 50-60 years of age with a university degree

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	99.9	77.4	208.1	209.5	*143.2*
Unemployment	6.0		13.0	10.3	*7.5*
OLF	15.7	52.3		20.5	*28.5*

N = 281 individuals

Matrices of spells duration (months): Individuals between 30 and 39 years of age of seniority

Table D.15: 30-39 years of age with 5 years or fewer of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	15.6	12.2	13.5	26.9	*13.9*
Unemployment	7.1		6.6	9.6	*7.0*
OLF	19.5	21.0		14.4	*20.2*

N = 1374 individuals

Table D.16: 30-39 years of age with between 5 and 10 years of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	50.3	45	49.9	71.1	*48.7*
Unemployment	3.8		5.3	6.3	*4.0*
OLF	7.5	5		14.2	*7.0*

N = 1231 individuals

Table D.17: 30-39 years of age with more than 10 years of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	100.3	100.8	117.1	171.7	*103.1*
Unemployment	3.8		4.3	7.9	*3.9*
OLF	10.0	4.7		11.5	*8.3*

N = 1654 individuals

Matrices of spells duration (months): Individuals between 40 and 49 years of age by seniority

Table D.18: 40-49 years of age with 5 years or fewer of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	15.1	12.7	12.3	26.2	*13.4*
Unemployment	7.4		9.0	8.1	*7.6*
OLF	25.6	20.5		18.5	*23.2*

N = 688 individuals

Table D.19: 40-49 years of age with between 5 and 10 years of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	46.7	49.9	52.8	70.7	*49.0*
Unemployment	5.1		4.5	9.3	*5.0*
OLF	7.0	11.1		14.2	*8.2*

N = 742 individuals

Table D.20: 40-49 years of age with more than 10 years of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	136.6	138.4	183.4	218.1	*147.2*
Unemployment	4.4		5.4	7.7	*4.5*
OLF	9.1	5.0		12.4	*8.2*

N = 1811 individuals

Matrices of spells duration (months): Individuals between 50 and 60 years of age by seniority

Table D.21: 50-60 years of age with 5 years or fewer of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	12.8	10.9	16.6	27.9	*13.1*
Unemployment	7.7		7.8	9.9	*7.7*
OLF	22.1	16.2		24.4	*19.8*

N = 370 individuals

Table D.22: 50-60 years of age with between 5 and 10 years of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	44.5	45.7	61.5	74.7	*51.3*
Unemployment	4.6		8.6	9.9	*5.3*
OLF	20.2	5.8		20.6	*16.4*

N = 311 individuals

Table D.23: 50-60 years of age with more than 10 years of seniority

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	139.7	159.8	243.9	244.0	*193.4*
Unemployment	4.9		8.4	11.2	*5.7*
OLF	10.3	5.2		21.5	*8.9*

N = 1207 individuals

Matrices of spells duration (months): Individuals between 30 and 39 years of age by skill level

Table D.24: 30-39 years of age in the knwoledge and management field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	56.0	45.0	41.1	104.6	*51.1*
Unemployment	5.5		4.6	7.5	*5.4*
OLF	14.4	18.2		15.7	*15.8*

N = 643 individuals

Table D.25: 30-39 years of age in the data field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	37.9	34.4	37.1	96.4	*36.6*
Unemployment	6.6		6.7	9.1	*6.6*
OLF	19.7	22.6		16.7	*21.0*

N = 1367 individuals

Table D.26: 30-39 years of age in the services field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	37.5	24.5	31.7	94.6	*32.2*
Unemployment	7.5		6.9	10.8	*7.4*
OLF	22.8	21.7		14.1	*22.3*

N = 808 individuals

Table D.27: 30-39 years of age in the goods field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	41.2	24.8	26.6	106.0	*32.1*
Unemployment	5.8		5.7	8.2	*5.8*
OLF	10.9	13.2		10.6	*11.8*

N = 1424 individuals

Matrices of spells duration (months): Individuals between 40 and 49 years of age by skill level

Table D 28: 40-49 years of age in the knwoledge and management field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	77.3	63.2	102.4	151.7	*76.2*
Unemployment	7.6		7.8	9.3	*7.6*
OLF	15.5	22.6		10.8	*18.2*

N = 578 individuals

Table D.29: 40-49 years of age in the data field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	58.5	46.5	80.2	147.4	*58.8*
Unemployment	7.0		7.3	9.8	*7.1*
OLF	30.7	28.2		17.1	*29.6*

N = 1052 individuals

Table D.30: 40-49 years of age in the services field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	56.7	30.3	51.8	131.6	*47.1*
Unemployment	6.8		11.3	11.3	*7.6*
OLF	31.1	20.8		20.7	*26.7*

N = 628 individuals

Table D.31: 40-49 years of age in the goods field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	67.8	39.3	54.4	163.8	*53.2*
Unemployment	6.0		5.4	5.7	*6.0*
OLF	6.4	7.3		10.6	*6.7*

N = 976 individuals

Matrices of spells duration (months): Individuals between 50 and 60 years of age by skill level

Table D.32: 50-years in the knowledge and management field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	111.6	68.7	188.3	193.6	*135.4*
Unemployment	7.8		7.0	9.6	*7.6*
OLF	9.9	6.9		20.0	*8.8*

N = 295 individuals

Table D.33: 50-60 years of age in the data field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	76.0	80.4	164.2	180.2	*116.8*
Unemployment	7.1		10.6	12.9	*8.2*
OLF	33.3	25.0		23.3	*30.6*

N = 526 individuals

Table D.34: 50-60 years of age in the services field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	55.4	44.9	110.2	143.5	*75.4*
Unemployment	8.7		8.1	12.4	*8.5*
OLF	17.4	14.1		23.3	*16.3*

N = 421 individuals

Table D.35: 50-60 years of age in the goods field

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	76.7	45.2	131.6	208.9	*83.7*
Unemployment	5.8		5.9	9.0	*5.8*
OLF	11.6	6.1		20.8	*9.8*

N = 647 individuals

Matrices of spells duration (months): Individuals between 30 and 39 years of age by whether they were permanently laid off or not

Table D.36: 30-39 years of age permanently laid off between 1993 and 1997

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	28.4	23.4	25.4	28.3	*26.0*
Unemployment	6.2		6.2	8.7	*6.2*
OLF	10.3	9.5		10.5	*10.0*

N = 744 individuals

Table D.37: 30-39 years of age not permanently laid off between 1993 and 1997

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	51.9	35.5	36.1	113.6	*43.5*
Unemployment	6.5		7.8	17.4	*6.8*
OLF	19.3	26.9		16.0	*22.9*

N = 3589 individuals

Matrices of spells duration (months): Individuals between 40 and 49 years of age by whether they were permanently laid off or not

Table D.38: 40-49 years of age permanently laid off between 1993 and 1997

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	40.8	32.7	39.9	36.3	*37.0*
Unemployment	5.5		6.7	6.7	*5.7*
OLF	12.5	9.4		15.2	*11.3*

N = 476 individuals

Table D.39: 40-49 years of age not permanently laid off between 1993 and 1997

Origin	Destination				
	Employment	Unemployment	OLF	Censored	*Total*
Employment	78.2	54.2	79.8	165.6	*71.5*
Unemployment	7.6		12.7	25.2	*8.6*
OLF	21.7	31.5		17.5	*26.3*

N = 2844 individuals

Matrices of spells duration (months): Individuals between 50 and 60 years of age by whether they were permanently laid off or not

Table D.40: 50-60 years of age permanently laid off between 1993 and 1997

	Destination				
Origin	Employment	Unemployment	OLF	Censored	*Total*
Employment	46.3	42.3	85.5	46.2	*54.2*
Unemployment	6.7		7.6	9.5	*6.9*
OLF	8.0	8.5		20.9	*8.2*

N = 293 individuals

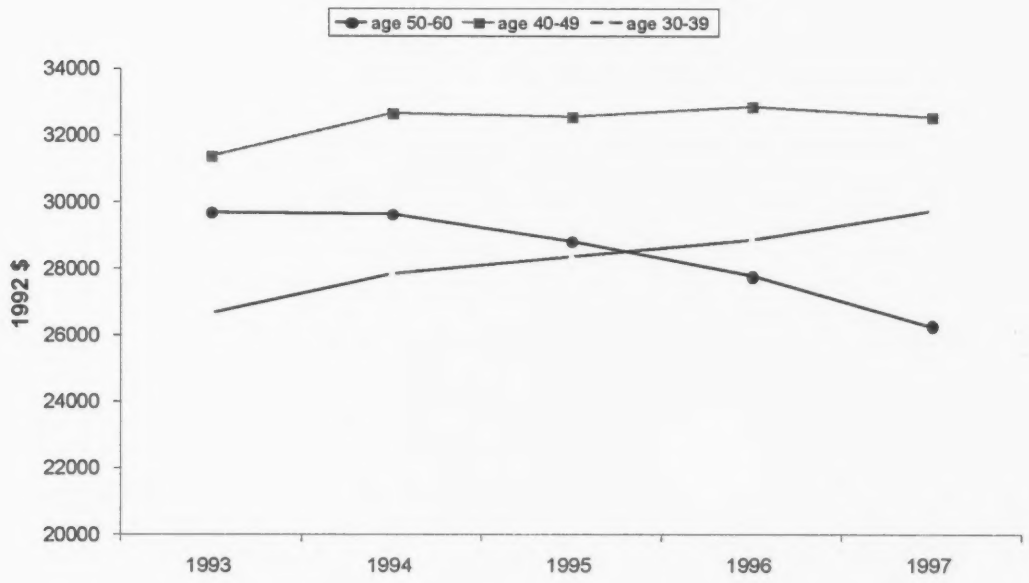
Table D.41: 50-60 years of age not permanently laid off between 1993 and 1997

	Destination				
Origin	Employment	Unemployment	OLF	Censored	*Total*
Employment	97.5	65.4	159.4	202.2	*119.7*
Unemployment	6.8		11.3	17.3	*8.1*
OLF	21.2	26.1		23.1	*23.1*

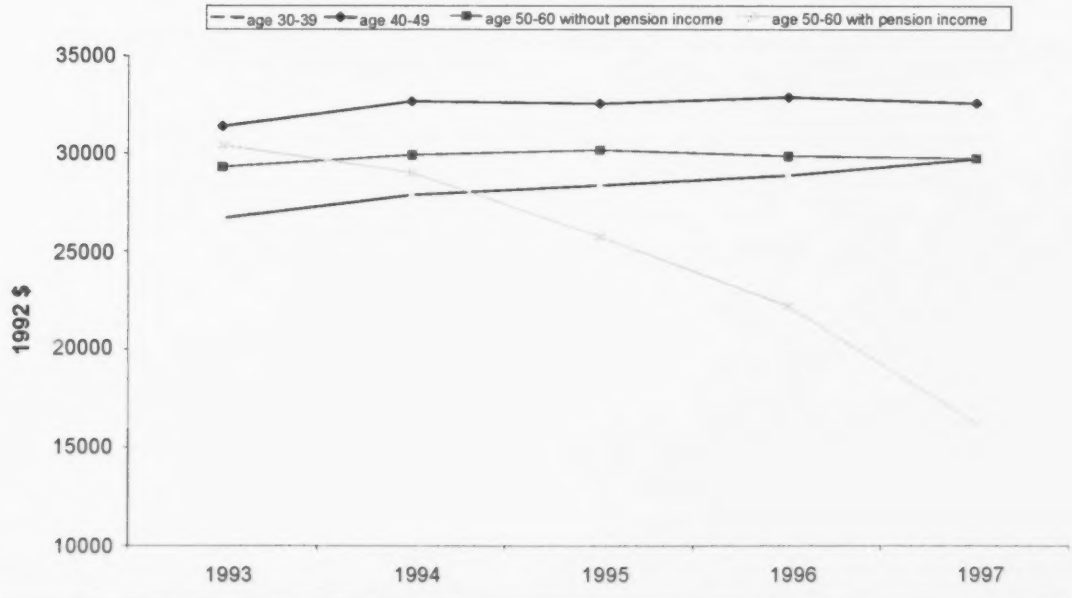
N = 1643 individuals

Appendix E
Average annual earnings

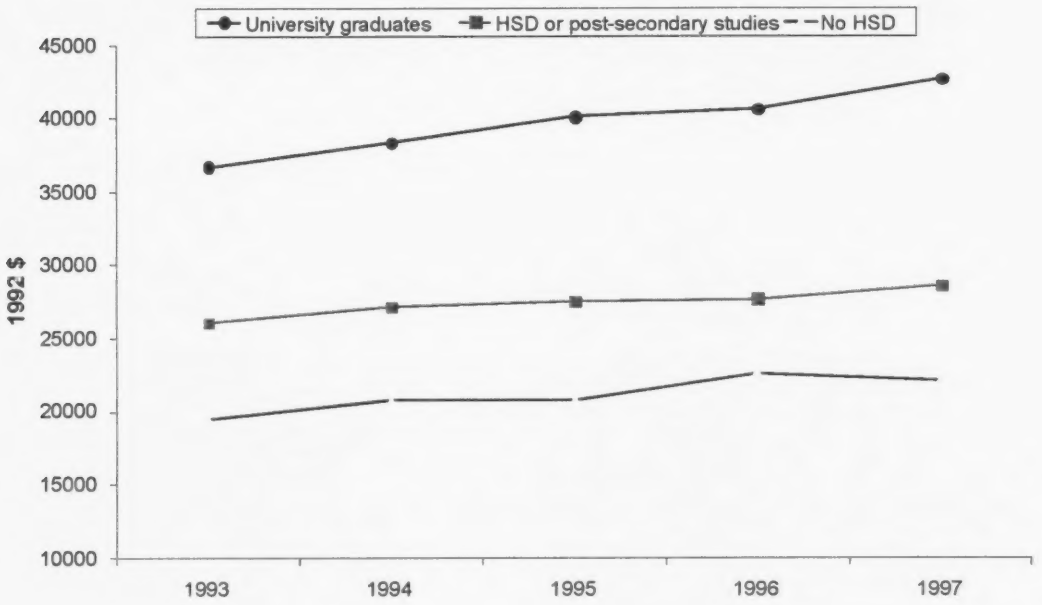
Graph E.1
Average annual earnings by age group



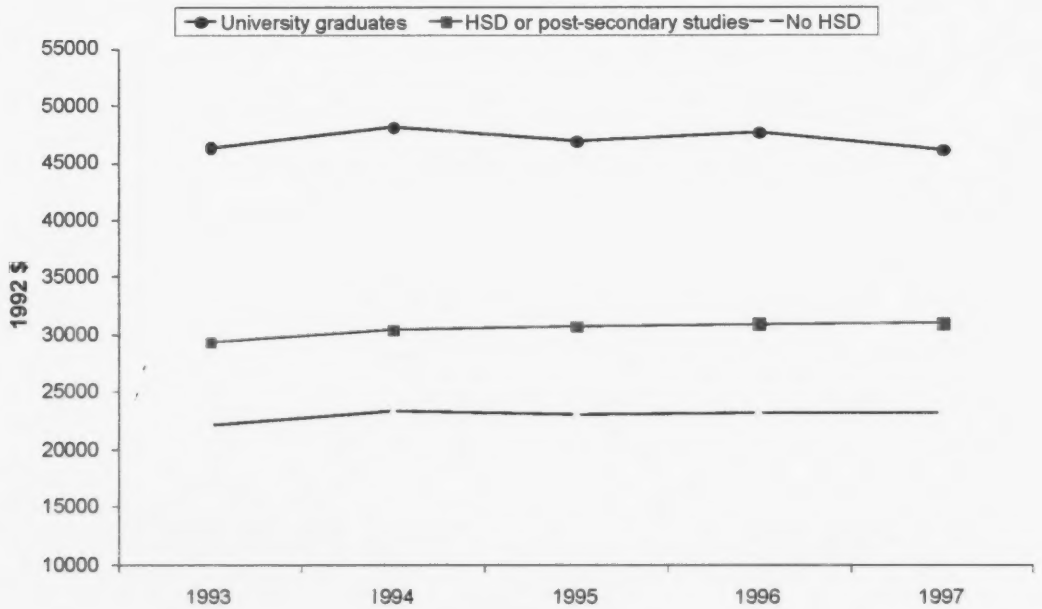
Graph E.2
Average annual earnings by age group, distinction for 50-60 years



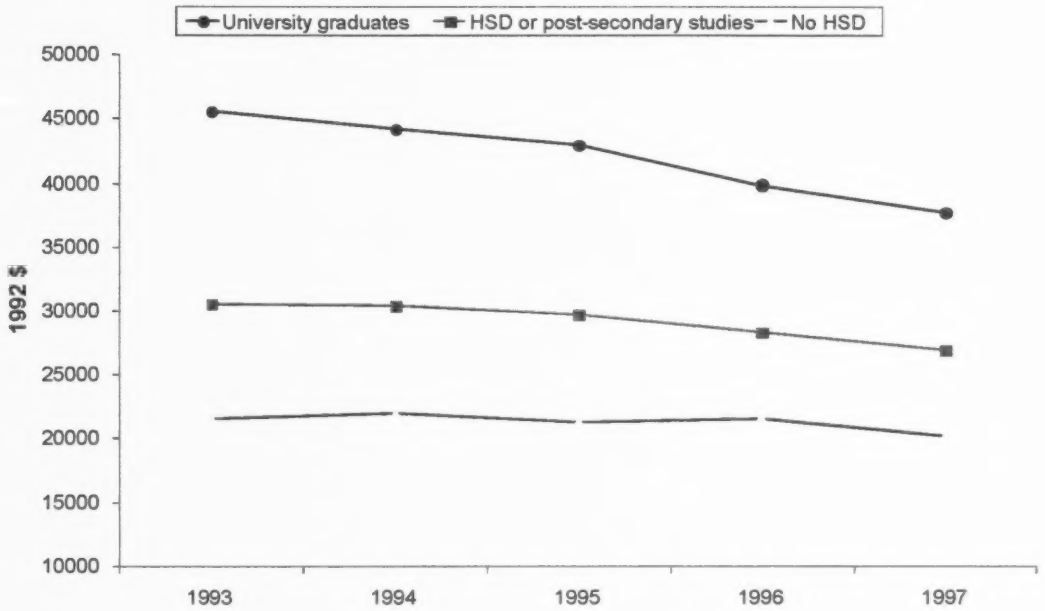
Graph E.3
Average annual earnings: 30-39 years of age by level of education



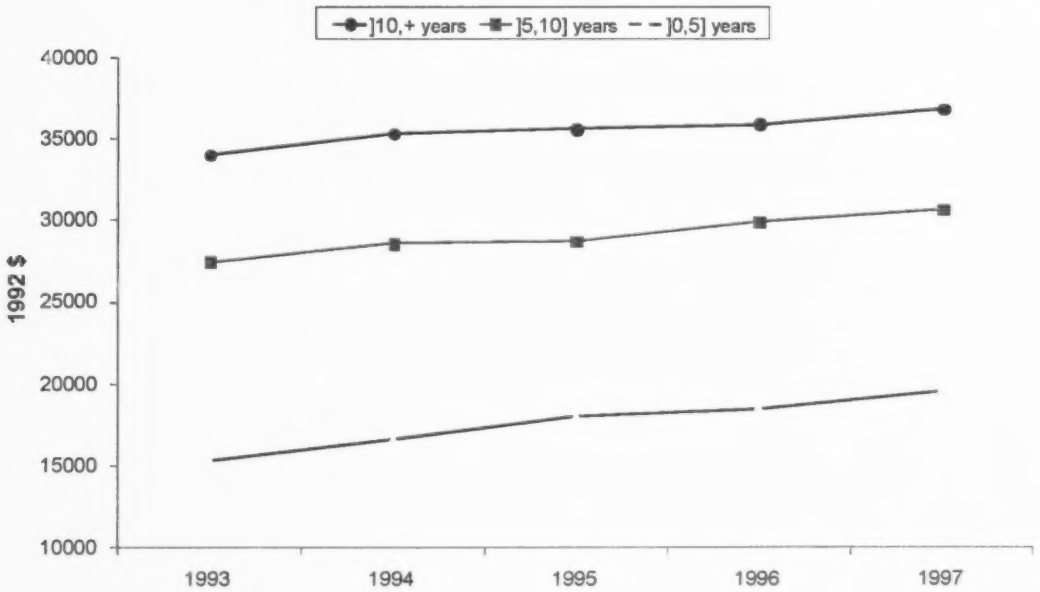
Graph E.4
Average annual earnings: 40-49 years of age by level of education



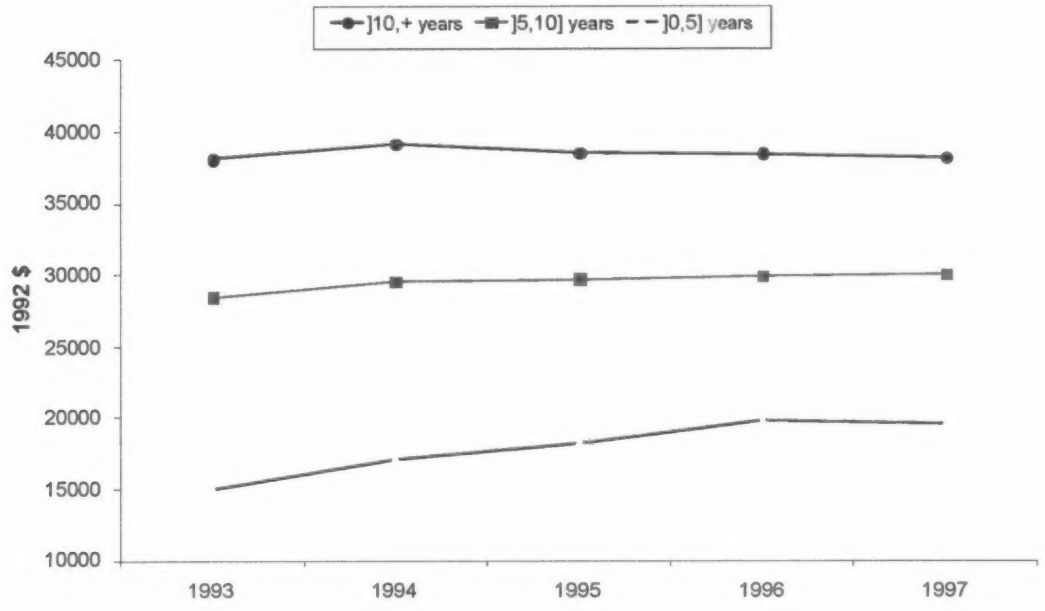
Graph E.5
Average annual earnings: 30-39 years of age by level of education



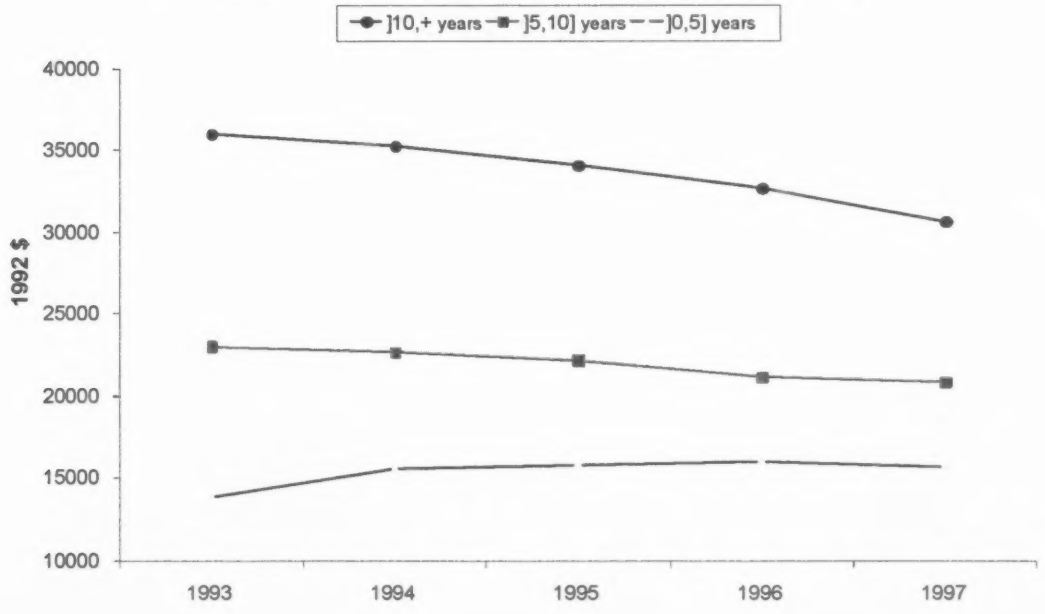
Graph E.6
Average annual earnings: 30-39 years of age by seniority



Graph E.7
Average annual earnings: 40-49 years of age by seniority

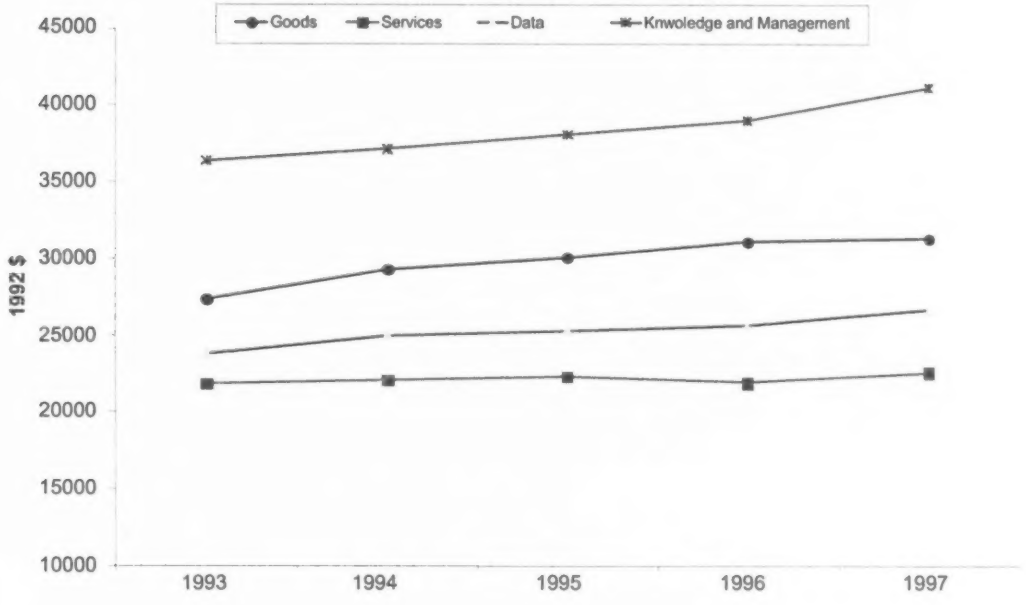


Graph E.8
Average annual earnings: 50-60 years of age by seniority



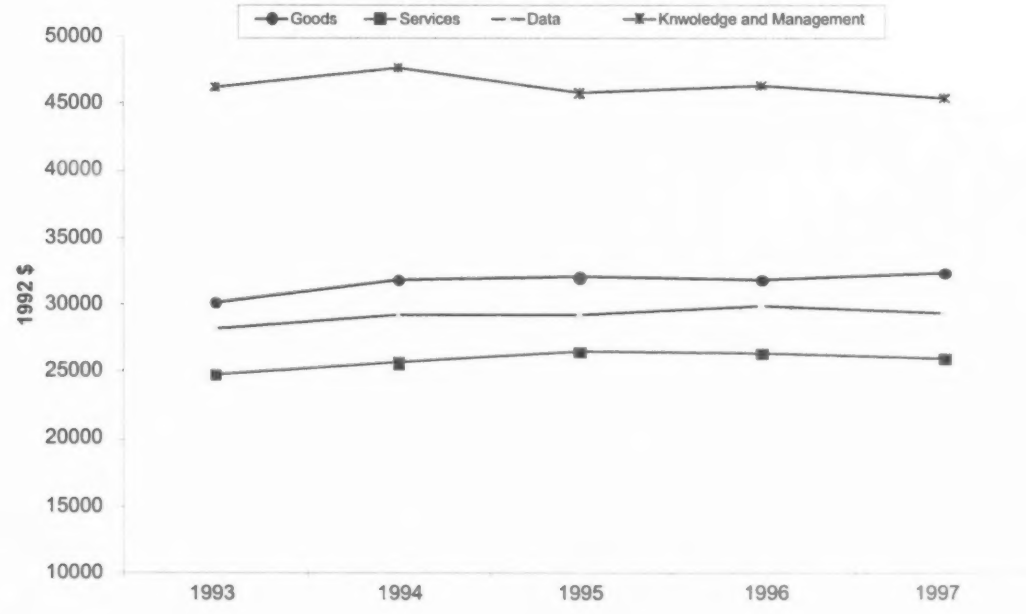
Graph E.9

Average annual earnings: 30-39 years of age by skill level



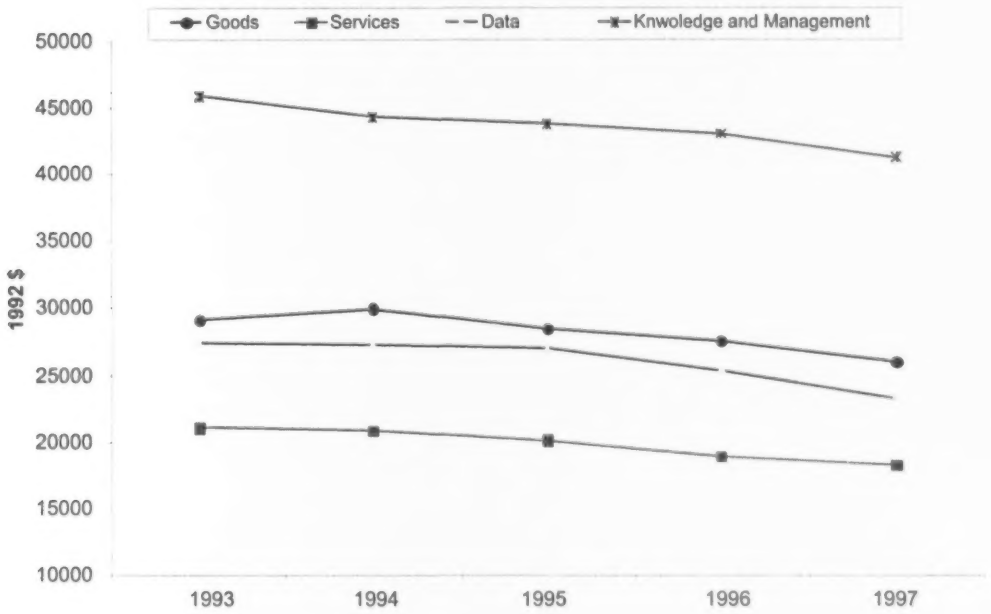
Graph E.10

Average annual earnings: 40-49 years of age by skill level



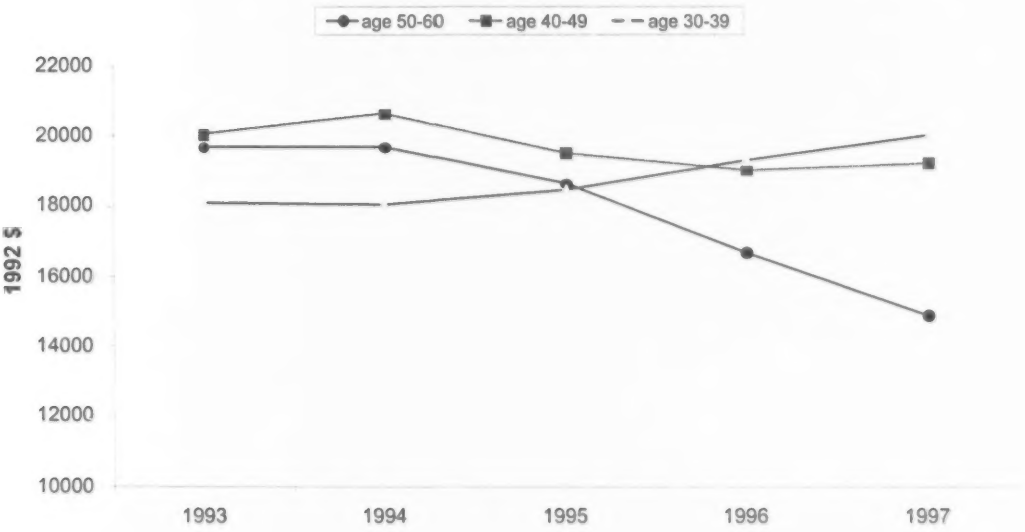
Graph E.11

Average annual earnings: 50-60 years of age by skill level

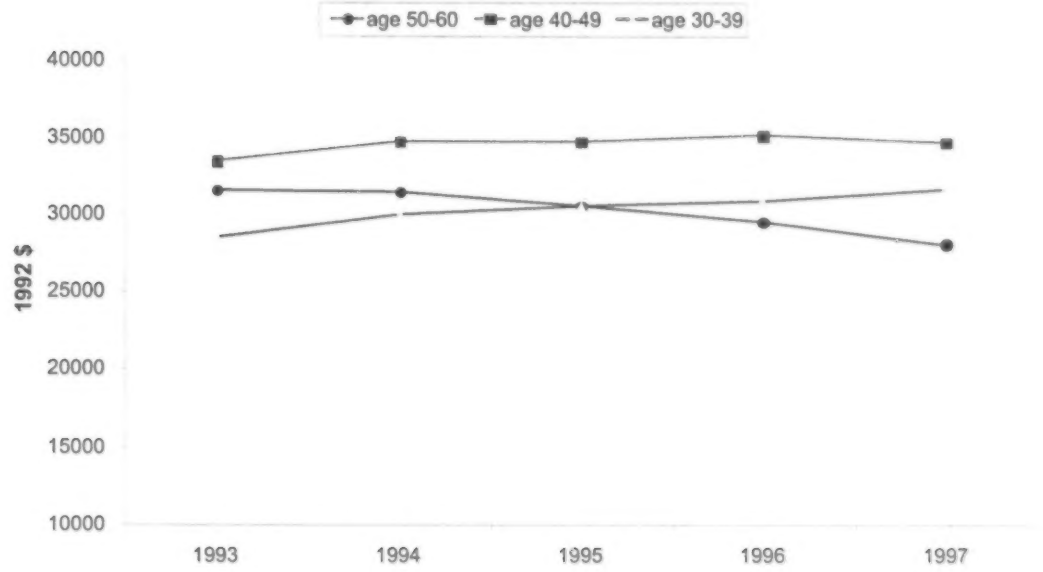


Graph E.12

Average annual earnings: Individuals permanently laid off between 1993 and 1997



Graph E.13
Average annual: Individuals not permanently laid off between 1993 and 1997



Appendix F

Permanent layoffs

This section presents the findings of the analysis of the transitions of older workers when they are permanently laid off.[39] In order to evaluate the problems experienced by these individuals, their behaviour is compared with that of younger workers in the same situation.

F.1 Description of individuals laid off

Our analysis shows that a total of 16% of the individuals in the sample were laid off permanently at least once between 1993 and 1997 (Table F.1). The proportion of laid-off workers in the 30-39 age group was slightly higher than among older workers. We also find that the level of education of laid-off individuals is lower than that for the sample as a whole. Individuals working in the goods production field are over-represented in the population of individuals who were laid off permanently during the period examined compared with their distribution in the total sample.

Table F.1

Characteristics of individuals laid off permanently between 1993 and 1997

	30-39 years	40-49 years	50-60 years
Number of permanent layoffs			
None	3589(83%)	2844(86%)	1643(85%)
One	509(12%)	324(10%)	208(11%)
Two or more	235(5%)	152(5%)	85(4%)
Level of education of individuals laid off			
No HSD	177(24%)	144(30%)	126(43%)
HSD or more	567(76%)	329(69%)	164(56%)
Job seniority at time of first layoff			
Less than one year	325(44%)	164(34%)	99(34%)
Between 1 and 10 years	349(47%)	224(47%)	105(36%)
10 years or more	70(9%)	88(18%)	89(30%)
Skill level of occupation at time of first layoff			
Knowledge and management	80(11%)	56(12%)	31(11%)
Data	203(28%)	147(31%)	83(29%)
Services	126(17%)	78(17%)	50(17%)
Goods	323(44%)	189(40%)	127(44%)

Note: Totals may differ as some information was not available for all laid off individuals

We find that individuals with fewer than 10 years of seniority were affected by permanent layoff far more often than individuals with more than 10 years of seniority in all of the age groups considered. However, among older workers, the proportion of individuals with more than 10 years seniority that were laid off is much higher than among younger workers. Nevertheless, it is possible that this finding merely reflects a compositional element, older workers generally having more seniority than younger workers (see Table I).

[39] Permanent layoffs are defined as follows: the employment spell is terminated because of a layoff (non-seasonal) or because the company in which the individual was working closed or moved its operations.

F.2 Transitions

F.2.1 Average number of spells

Individuals laid off permanently during the period considered made transitions more than three times more often than other individuals in general and this finding applies to all age groups considered (Table F.2). Laid-off individuals had on average twice as many employment and OLF spells as individuals who were not permanently laid off. They also experienced four times as many spells of unemployment as other individuals.

Table F.2
Average number of spells for individuals between 1993 and 1997
Total sample by whether the individuals were laid off or not

	Laid off	Not laid off
Type of spells	**30-39 years of age**	
Employment	4.0	1.7
Unemployment	1.7	0.4
Out of the labour force	0.8	0.4
Total	**6.5**	**2.5**
	40-49 years of age	
Employment	3.7	1.6
Unemployment	1.8	0.4
Out of the labour force	0.8	0.3
Total	**6.3**	**2.2**
	50-60 years of age	
Employment	3.2	1.5
Unemployment	1.6	0.3
Out of the labour force	1.0	0.6
Total	**5.9**	**2.4**

Individuals in the 30-39 age group who were permanently laid off made more transitions in total than older workers. However, the number of unemployment spells of laid-off individuals did not vary statistically significantly by age.

F.2.2 Censored spells

Our examination of transitions by origin and destination reveals that in December 1997 (Graphs B.12 to B.14) individuals who had been permanently laid off were more likely to be unemployed or out of the labour force than individuals who had not been laid off during the period considered. In particular, for older workers, 47% of laid-off individuals were employed in December 1997 compared with 69% of individuals of the same age group who had not been laid off. Among individuals 30 to 39 years and 40 to 49 years, these percentages were 69% and 75% respectively for individuals who had been laid off and 89% and 90% for those who had not been laid off between 1993 and 1997. These findings are in keeping with those reported in the literature on displaced workers, specifically, that a permanent layoff has a major impact on the probability of re-employment of workers

F.2.3 Transitions by origin and destination

If we examine the transitions completed within the observation period (Graphs C.36 to C.41), we find in general that, in each age group, transitions from a job to unemployment are more frequent among individuals laid off than among other individuals, the other types of transitions being usually more common among individuals not laid off. This finding may seem somewhat surprising in terms of transitions from employment to out of the labour force, especially for older workers. Chan and Stevens (2001) report in their study that older workers who are laid off are much more likely to retire from the labour force than other older workers. The situation may be explained by eligibility criteria for Employment Insurance benefits, this program perhaps encouraging individuals who have been permanently laid off to seek a new job (rather than leave the labour force) in order to be able to receive these benefits.

We find that transitions from unemployment to employment were more common among individuals laid off than among others, while transitions from unemployment to out of the labour force were more frequent among individuals who had not been laid off, and these findings apply to all age groups. [40]

Among older workers, we do not find any differences between laid-off individuals and others with respect to transitions from out of the labour force. However, for younger individuals, we find that transitions from out of the labour force to employment were more common for laid-off individuals, while transitions from this out of the labour force to unemployment were more common for individuals who had not been permanently laid off.

F.2.4 Duration of spells

As expected, we find that the average length of employment spells of individuals laid off during the observation period was shorter than for individuals not permanently laid off (see Tables D.36 to D.41). However, our findings for duration of unemployment and OLF spells are rather surprising. For all age groups, the length of spells out of the labour force completed before January 1998 was longer for individuals who were not laid off. For the 30-39 age group and 50-60 age group, the average length of spells of unemployment completed within the observation period were not statistically different regardless of whether the individual was laid off or not. In the 40-49 age group, individuals who had not been laid off experienced longer spells of unemployment.

Overall, there were no statistically significant differences in the time spent unemployed or out of the labour force when comparing the three age groups based on whether individuals were laid off or not. Thus, once again, older workers do not appear to have had a more difficult time than younger workers as a result of being laid off.

These findings appear to contradict the literature on displaced workers where it is generally reported that individuals who have been laid off experience longer spells of unemployment than other individuals. In our analysis, we find that laid-off individuals had jobless spells that were

[40] Given the small number of transitions from unemployment to out of the labour force (and vice versa) among individuals laid off, these data should be treated with caution.

shorter or of the same length as other individuals. There are several factors that may explain these findings. First, the findings reported in the literature are based mostly on data from the United States. It is also possible that the time during which individuals may collect Employment Insurance benefits affects the time spent unemployed or out of the labour force, producing similar behavioural trends for individuals regardless of whether they were laid off or not. However, our findings regarding the more unstable behaviour in the labour force of laid-off individuals are in keeping with the results generally found in the literature.

F.2.5 Transitions after layoff

Since we are examining layoffs that occurred at any time between January 1993 and December 1997, we can only conduct a limited analysis of the transitions following the first permanent layoff. We cannot, for example, compare the number of spells following the first layoff because these layoffs did not all occur at the same time. Thus, for each individual, the period following the layoff is different, which affects the number of transitions that can be made and might bias any comparisons that we might want to make. Since samples available to us are not large enough to isolate, for example, individuals who were laid off during a specific year and to compare the subsequent transitions, we will briefly examine the transitions made by individuals in our sample immediately following their first permanent layoff. [41]

Our examination of the transitions made immediately following the first permanent layoff observed in our sample does not reveal any special problems for older workers (Table F.3). Among individuals laid off, as was the case with the sample in general, individuals in the 30-39 age group experienced more transitions directly from the job from which they were laid off to a new job than older workers. Layoffs followed by a departure from the labour force were more common among older workers. Lastly, the proportion of individuals for whom a permanent layoff was followed by an unemployment spell was not statistically different by the age group of the individuals.

Table F.3
Characteristics of the transitions following the first permanent layoff

	30-39 years	40-49 years	50-60 years
Most common transitions			
Employment→employment	288(39%)	151(32%)	78(27%)
Employment→unemployment	320(43%)	223(47%)	126(43%)
Employment→out of the labour force	136(18%)	102(21%)	89(30%)
Average length of spells surrounding the layoff			
Employment at time of layoff	3.4 years	5 years	8.4 years
Spell of unemployment following the layoff	6.9 months	6.3 months	7.7 months
Spell out of the labour force following the layoff	7.7 months	9.8 months	14.6 months
Spell without employment between the layoff and the next job*	7.7 months	7.0 months	6.6 months

* These data refer only to individuals who found jobs after layoff.

There is no statistical difference by age in the length of unemployment spells following the first layoff. However, the length of spells out of the labour force was longer for older workers than

[41] When individuals experienced more than one layoff during the period considered, we examined the first permanent layoff that occurred between January 1993 and December 1997.

for younger ones, a situation that was also observed for the sample in general. Lastly, the examination of the duration of the period between the permanent layoff and the start of a new job did not show any differences between the age groups.

F.3 Change in earnings

Graphs E.12 and E.13 show the change in average annual earnings[42] of individuals laid off by age group, as well as for individuals who were not laid off during the period considered. We find that, among laid-off individuals, there were generally no statistical differences in earnings among the three age groups. The only exception is found in 1997, where we observe that older workers earnings were lower than that of younger individuals. It is possible that following the lay off, some older workers experienced greater job losses than those encountered by younger workers (see Jacobson, LaLonde and Sullivan 2001). However, data at our disposal does not allow us to verify this hypothesis.

We also find that, for each of these age groups, the earnings of individuals who were not laid off were always higher than the earnings of those laid-off. Since this event often results in a spell of unemployment or an exit from the labour force, it is not surprising that annual earnings would be lower for workers who were laid off.

As expected, the analysis of the main source of income reveals that larger numbers of individuals who were laid off depended on government transfers. Similarly, the percentage of individuals who were not laid off for whom the main source of income was employment earnings was higher than for individuals who were laid off.

[42] To round out our analysis of the transitions immediately following layoffs, we tried to compare the employment earnings of individuals before and after the layoff. However, the size of the sample by age group did not allow a reliable analysis of this variable. Thus we decided to compare for each year the earnings of individuals who experienced a permanent layoff at some point between 1993 and 1997 to those of individuals who did not experience such layoffs during that period.

Bibliography

Acemoglu, Daron and Pischke, Jörn-Steffen. "Why Do Firms Train? Theory and Evidence." *Quarterly Journal of Economics*, February, 1998

Anderson, Patricia, Gustman, Alan and Steinmeier, Thomas. "Trends in Male Labor Force Participation and Retirement: Some Evidence on the Role of Pensions and Social Security in the 1970s and 1980s." *Journal of Labor Economics*, Vol. 17, No.4, 1999

Becker, Gary S. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*, Third Edition, The University of Chicago Press, 1993, 390 p.

Berkovec, James and Stern, Steven. "Job Exit Behavior of Older Men". Econometrica, Vol. 59, No.1, January 1991

Blau, David. "Labour Force Dynamics of Older Men." Econometrica, Vol.62, No.1, January 1994

Blau, David and Riphahn, Regina. "Labor Force Transitions of Older Married Couples in Germany". Labour Economics Vol. 6, 1999

Chan, Sewin and Stevens, Ann Huff. "Job Loss and Retirement Behavior of Older Workers." Journal of Labor Economics, Vol. 19, No.2, 2001

Fallick, Bruce C. "A Review of the Recent Empirical Literature on Displaced Workers." Industrial and Labor Relations Review, Vol. 50, No.1, October 1996

Jacobson, Louis S., LaLonde, Robert J. and Sullivan, Daniel G. *The Returns to Community College Schooling for Displaced Workers.* Working paper, Center for Human Potential and Public Policy, January 2001

Lavoie, Marie and Roy, Richard. *Employment in the Knowledge-Based Economy: A Growth Accounting Exercise for Canada.* Applied Research Branch, Research Paper R-98-8E, June 1998

Neal, Derek. "Industry-Specific Human Capital: Evidence from Displaced Workers." Journal of Labor Economics Vol.13, No.4, 1995

Osberg, Lars, Wolff, Edward N. and Baumol, William J. *The Information Economy: The Implications of Unbalanced Growth* Halifax: Institute for Research on Public Policy

Peracchi, Franco and Welch, Finis. "Trends in Labor Force Transitions of Older Men and Women." Journal of Labor Economics, Vol.12, No.2, 1994

Picot, Garnet and Heisz, Andrew. *The Performance of the 1990s Canadian Labour Market* Analytical Studies Branch, Research Paper series, No. 148, April 2000.

Picot, Garnett, Lin, Zhengxi and Pyper, Wendy. *Permanent Layoffs in Canada: Overview and Longitudinal Analysis* Analytical Studies Branch, Research Paper series, No. 103, September 1997.

Statistics Canada. *Labour force update*, Vol. 2, Issue 2, 1998.